

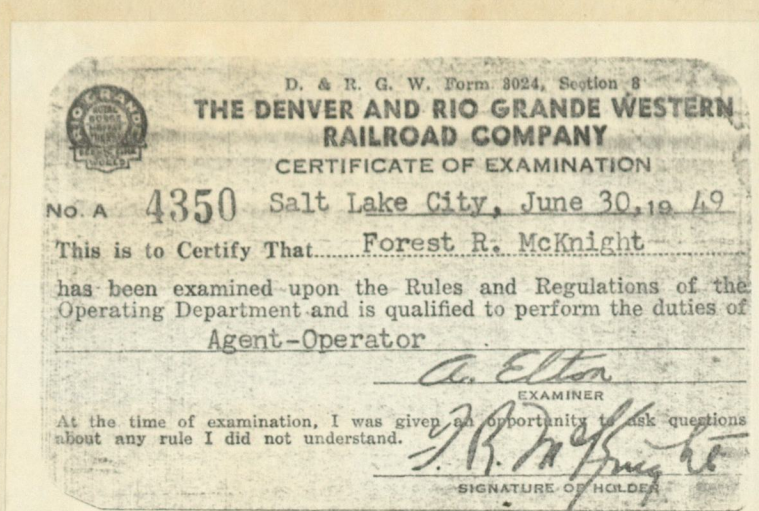
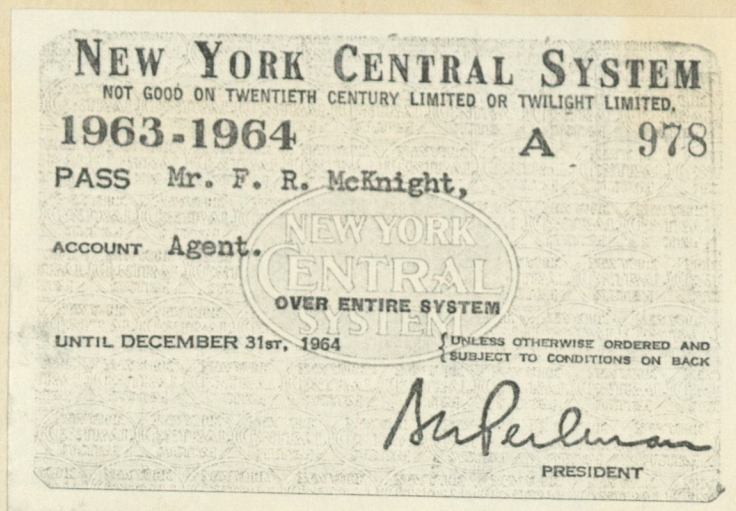
(1845-1945)

17

PLEASE...use care in turning pages :

RUN EXTRA.....

THE
RAILROAD
INDUSTRY



INTRODUCTION

This book, #17, varies considerable from other volumes in that it can be classed as a bonafied "scrapbook". Covering the various aspects of the railroad industry during the "steam Age" in which most of the companies involved are today no longer in existence. And a few personal reflections have been included. It is hoped readers will find the contents interesting, informative and (at times) humorous.

Portland, Ore.

F. Ray McKnight

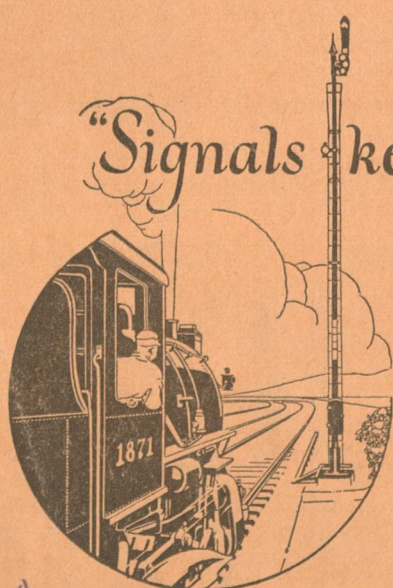
Wasting coal:

Stopping trains at passing siding switches for their operation by the train crews consumes time and wastes coal.

Records show that these stops take not less than 10 minutes time and burn up 800 to 1400 pounds of coal.

The use of power switch machines for distant operation makes it possible to operate passing siding and other important main track switches from a telegraph, a block or an interlocking station located a mile or more from the switch.

The saving in time and coal alone will in one year's time offset the cost of a complete installation of a power switch machine for distant operation.



R. A. G. E.

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, New York

FEDERAL SIGNAL COMPANY
Albany, New York

HALL SWITCH & SIGNAL COMPANY
Garwood, New Jersey

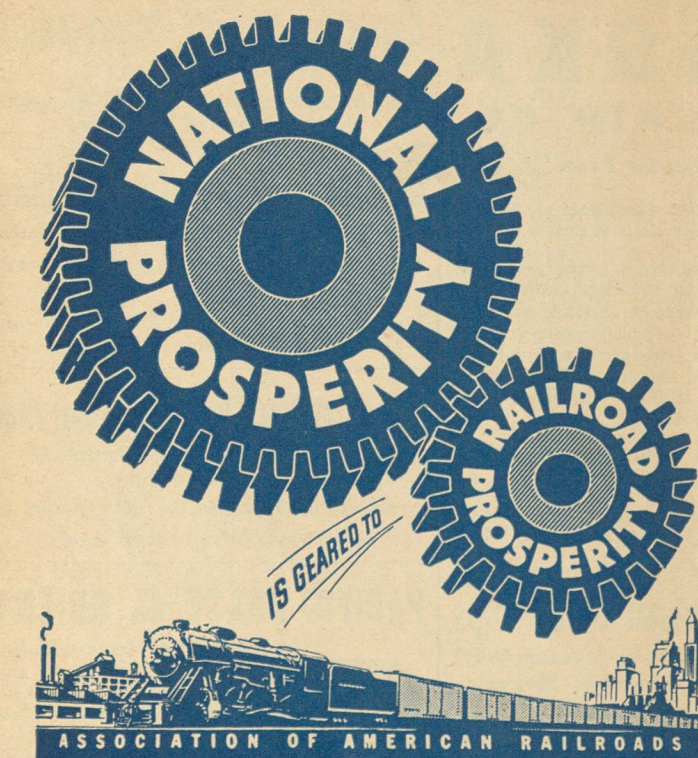
Nov 1922

386. What year marked the beginning of the railway era in America?

The railway era dates from 1830. In that year the first common carrier railroads were operated, notably, the Baltimore & Ohio and the South Carolina railroads. Railway charters were granted in Massachusetts, Pennsylvania, Ohio, Virginia, Kentucky and Louisiana. Several railroads were under construction, and by the end of the year there were twenty-three miles of railroad in operation in the United States.

DONATED TO THE RAILWAY &
LOCOMOTIVE HISTORICAL
SOCIETY.

DECEMBER 7, 1986

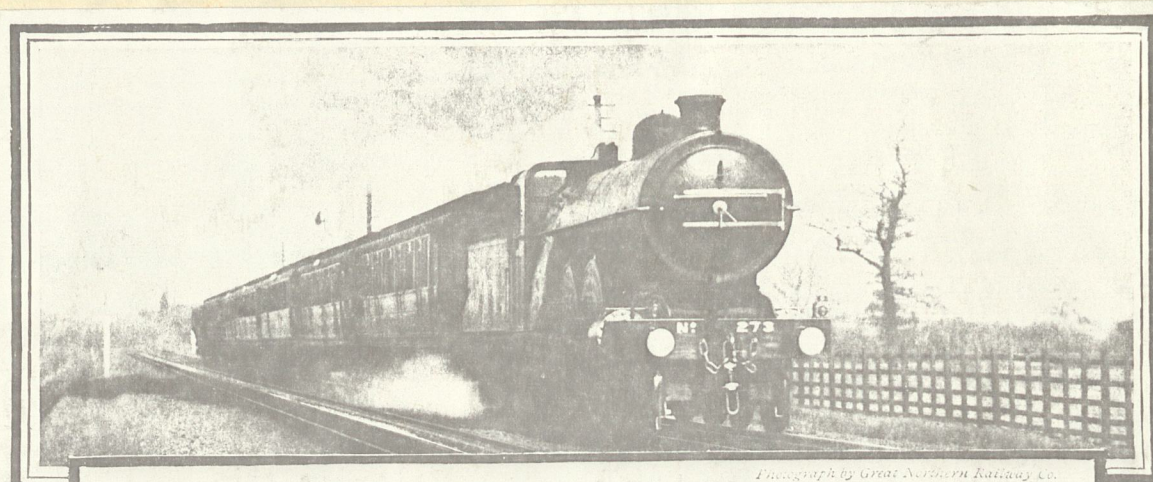


Respectfully dedicated to all those thousands who earned their livelihood working for the countless companies that, in one way or another, were part of the vast railroad industry in North America.

This volume, Book 17,
contains 1,154 clippings
on 166 pages



Some trains are pretentious, some are glamorous; others are as comfortable as an old shoe



Photograph by Great Northern Railway Co.

RAILWAY WONDERS OF THE WORLD

By
Frederick A. Talbot
In Four Volumes 1913 Edition

Foreword

NO invention since the march of civilisation began has changed the map of the world so completely as that of George Stephenson. No other production of the human brain has introduced such a powerful force of conquest, development, expansion, and settlement as the railway.

The opening up of new countries and territories by the steel highway constitutes the greatest romance in the world's history. It has shrunk time and distance, has created new cities, has brought aridity to fertility, has peopled the wilderness, has subjugated the mountain, and has let light into the forest. Swamp and desert, sea and snow, mountain and gulch have been vanquished in its irresistible advance.

The brain and blood, the will and muscle, nerve and soul which have been sacrificed in this conquest never can be forgotten; the men who fell in the great effort to drive this great civilising influence forward have built an imperishable monument which time cannot destroy.

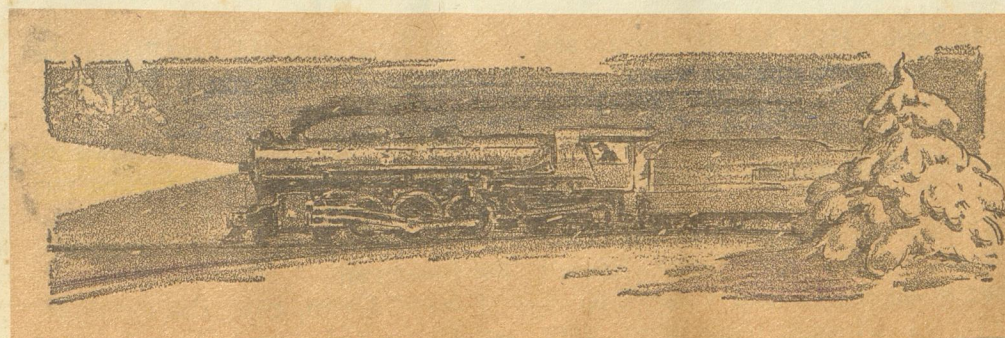
The plotting and building of the great railways of the world make one long story of exciting adventure, exacting hardship and toil, and of prodigious difficulty overcome. In the narration of this romance I have been assisted by many of those who have been engaged in weaving this network of steel along which flows the commerce of the world.

The railway constitutes a prolific field for inventive effort. There are various side issues associated with the main

Let the Engineer
Do the Driving
Relax when
you travel. Go
in Comfort and
Safety.
Go by Train!

We of the present time have been fortunate in witnessing perhaps the greatest development of the American steam locomotive. It might be quite safe to say that the past decade has produced as many improvements in motive power as a like period from about 1900 to 1910, when the trend started toward bigger and heavier engines. From 1934, when the present building program got under way with Alco constructing several 2-8-4 and 0-8-0 types, the designers and builders have placed on American railroads vastly improved, highly efficient machines. Only a few new types made their appearance. Of these, it seems the 4-6-6-4 type is outstanding. Many of us old "dyed-in-the-wool" class viewed with scorn the nightmares called "streamlining." Yet, underneath, it was the same motive power. From one extreme to the other, 4-4-4's to 4-8-8-4's!

F. Ray McKnight, U. S. Army.



PREFACE

BREATHES there a man with soul so dead that he does not thrill at the sight of a modern steam locomotive at work? Somewhere in the breast of every normal homo sapiens there stretches a cord that vibrates only to the sight and sound of a fine steam locomotive. Even now, with airplanes and motors to bid against it in its own fields of romantic interest, the steam locomotive retains its fascination. There are probably a number of reasons for this. I can think of at least two — its unusually demonstrative nature, and its extraordinary beauty.

Man has devised no other machine that expresses its feelings so frankly and unmistakably. A locomotive sighs, it pants, it coughs, it barks; it emits impassioned shrieks and mournful toots; it puts forth powerful staccato protests at hauling a heavy load or climbing a steep grade; it purrs ecstatically as it romps along the rails at a mile a minute; it can hiss and throb and snort and tinkle. And, in addition to all these auditory forms of expression, it has its visual signs: its plumes of steam, spelling surplus energy; its belching of black smoke, denoting determination; and its sparks at night, registering passion.

As for its beauty, I confess to a certain reluctance in directing attention to it. "I hope", wrote Elie Faure, the French critic, "that the American engineer will never take note of the beauty of the utilitarian structures that he builds. It could prove his undoing. For when the conception of the beautiful qualifies the conception of the useful, utility misses its mark, and beauty is done for." He is speaking of buildings, but his words apply equally as well to locomotives. The reason they have succeeded in becoming so beautiful is because their designers never thought of them as such. I repeat, the steam locomotive, especially in its latest phases, was beautiful, with a beauty of dignity and power and dash that made an unmistakable appeal.

New York Tribune, 1927.

problem of building the road, and these have been incorporated. The primitive tools, the pick and shovel, have been superseded by wonderful time- and labour-saving mechanical devices, which expedite and facilitate the work of the builder. Then the cry for additional railway facilities, which is raised on all sides, has been responsible for the production of improved, quicker, and cheaper methods of operation. This question has stimulated the evolution of bigger and more powerful locomotives, larger freight wagons, more capacious passenger coaches: the cry for the annihilation of time and distance has animated the struggle for higher traveling speeds with safety. All these factors are described in due course.

During the past few years the struggle for supremacy between steam and electricity as a motive power has become exceedingly acute. The attempts which are being made, and the successes achieved, in this direction have received their meed of attention.

In the early days the towering mountain range was considered a well-nigh impassable barrier. Nowadays the engineer does not worry himself as to how to climb over the obstacle: he plunges boldly through its base. Or he lays a peculiar track up its precipitous flanks, whereby passengers may be conveyed in safety to otherwise inaccessible eyries, to gaze upon majestic panoramas of glacial scenery.

The turbulent, wandering river, the mud-flat, the dismal desert, and the hurricane-ravaged islet worry the technical mind sorely, and marvellous ingenuity is displayed in their conquest. When all known methods of meeting the situation become exhausted, and prove futile, then new ways and means have to be devised. As a result many startling wonders are wrought.

The present generation has become so accustomed to the railway that it regards it somewhat with indifference. Yet it is difficult to realise how the world rolled

along before George Stephenson's invention appeared upon the scene. If this planet were robbed suddenly of all its railways, a catastrophe almost as terrible as that arising from the deprivation of its sunlight would be precipitated. This familiarity has served to obscure the glamour and romance associated with construction.

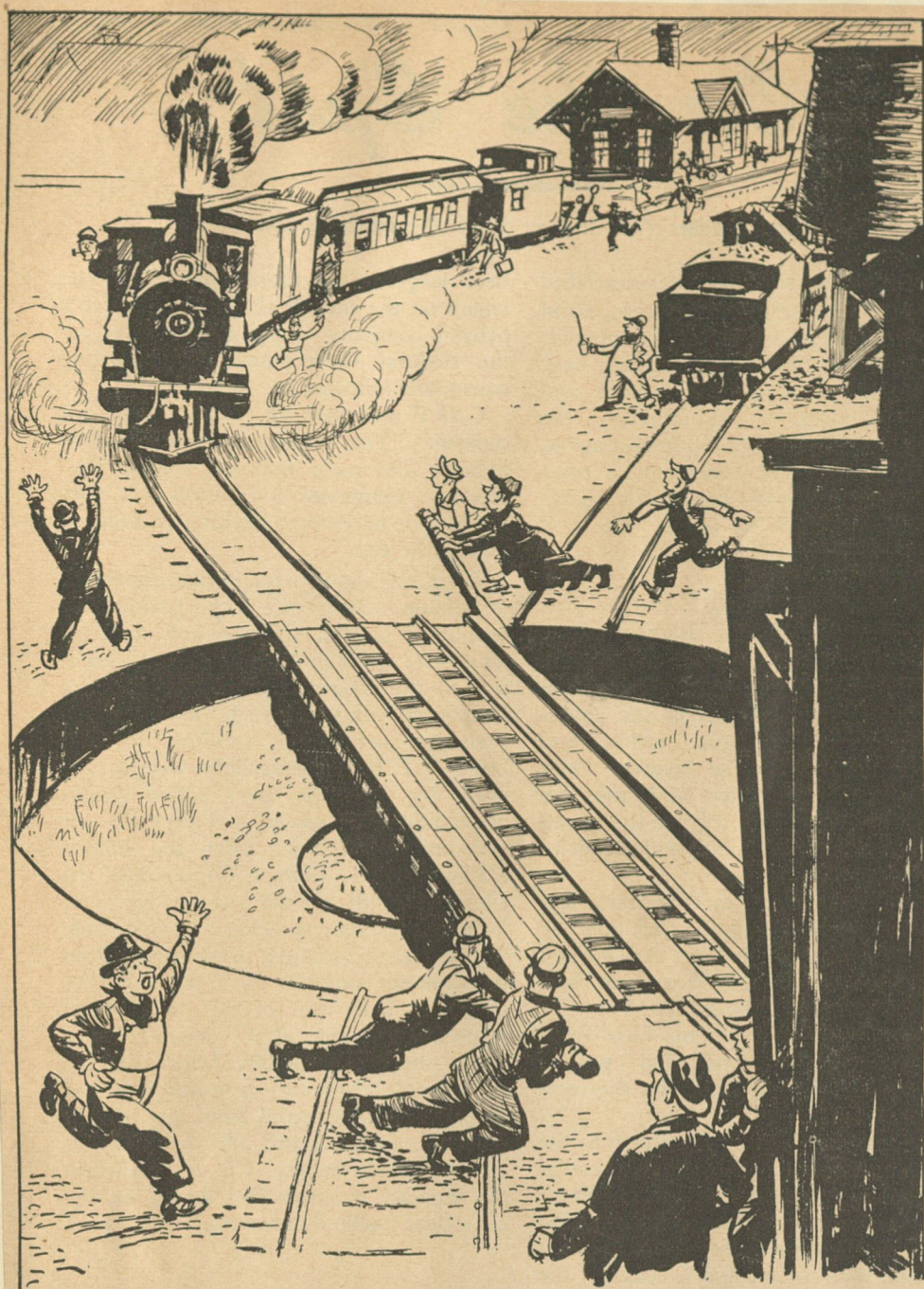
Obviously it would be impossible to relate the incidents and episodes associated with every one of the 800,000 miles of steel track enmeshing this globe. I have made merely a selection of the great roads between the two Poles, some of which perhaps are better known than others.

Technicalities have been simplified purposely, as this work is not written for the master of craft, but more particularly for those generally interested in railways, financially or otherwise. Particular insistence has been centred upon the many peculiar forms which the resistance of Nature has assumed to frustrate puny human endeavour, and the methods elaborated to cope with unusual situations.

Notwithstanding a century's progress, railways are yet in their infancy. New construction is more active to-day than ever. Still, while new lines are being thrown out in all directions, and in accordance with the most modern and approved principles of railway engineering, the pioneer roads are not being neglected. Competition is demanding their overhaul and improvement, and in many instances a steel highway has been changed out of all recognition in the attempt to eliminate the blunders and mistakes made in the first place. In fact, more money is being expended in the reconstruction of existing railways than in the prosecution of new undertakings. This transformation forms quite as attractive a story as that of original construction, and therefore is deserving of inclusion among "Railway Wonders of the World."

SHIP BY RAIL and KNOW your merchandise will arrive in GOOD CONDITION and ON TIME

F. RAY McKNIGHT
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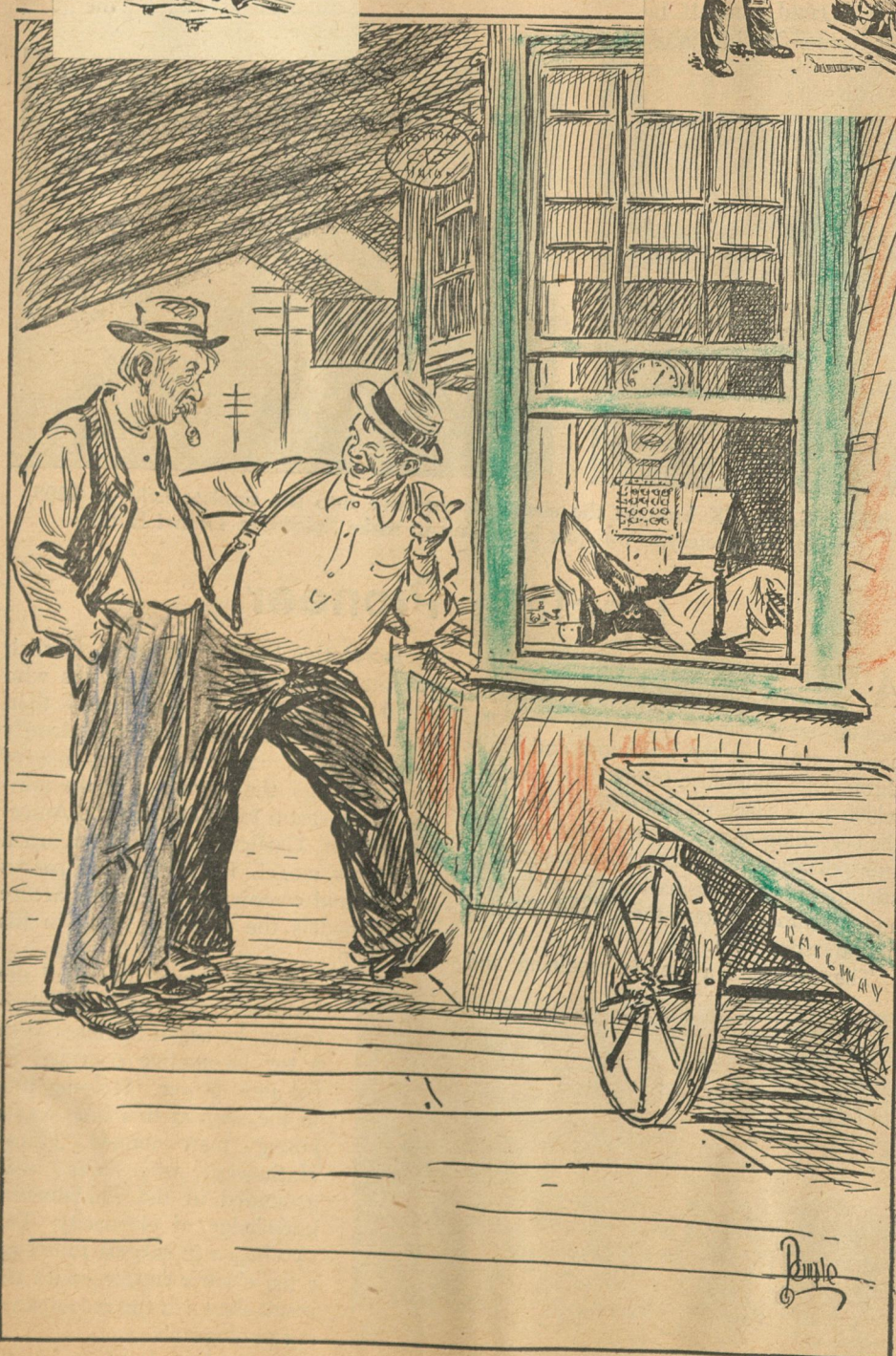
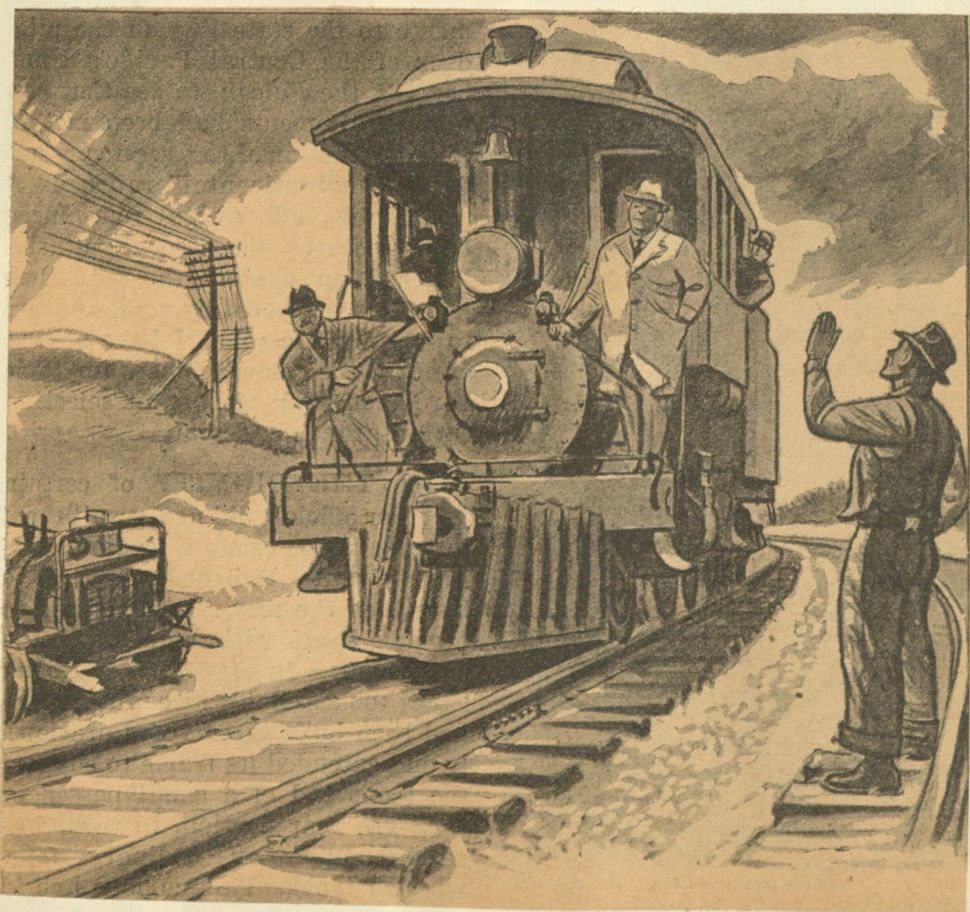
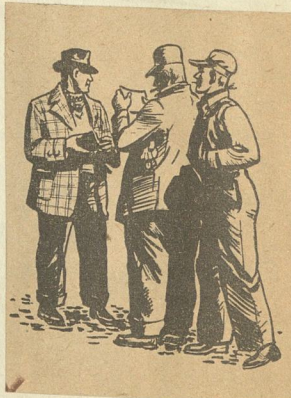
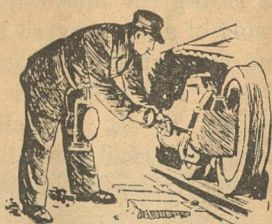
"The Hog Law's about to catch Uncle Ben"

Joe Easley

The Boomer Trail



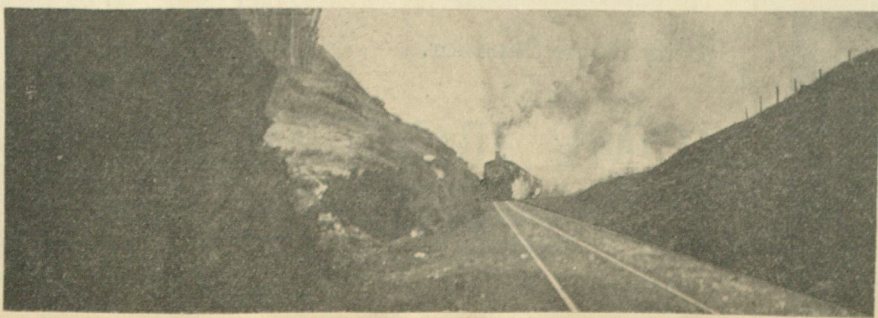
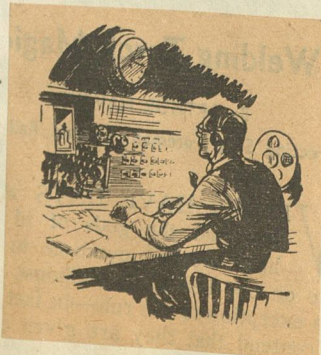
"Boomers can find their place, anywhere."



Back in the Days

By Harry Temple

"Joe's kid turned out to be a smart boy!"





First lady operator employed in 1875

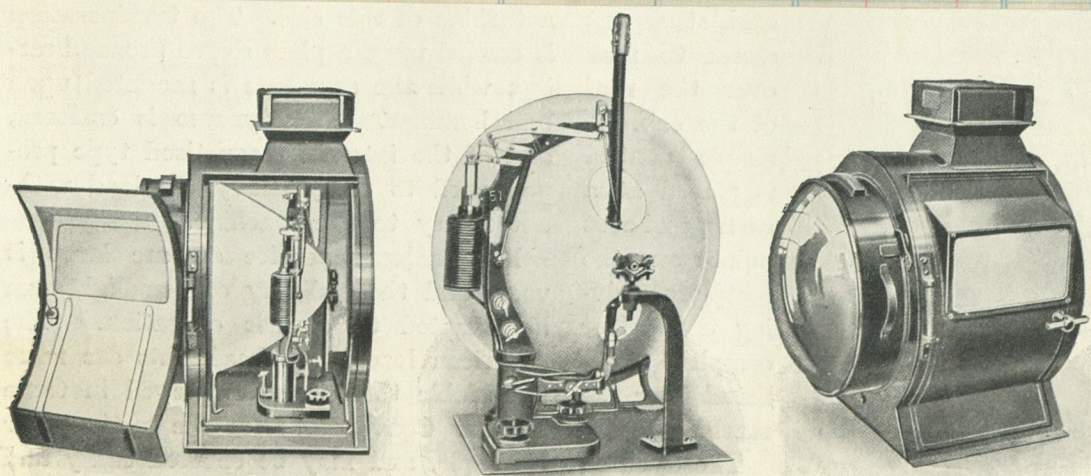
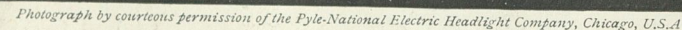


RENDERING RAILWAY TRAVEL

The electric searchlight of the locomotive when focused correctly, as in this illustration, throws a magnificent
a mile ahead. This striking picture, photographed by the electric

AT NIGHT AS SAFE AS BY DAY.

white ray sufficiently powerful to enable the driver to detect an object the size of a man on the road half headlight itself, shows how brilliantly the track is illuminated.

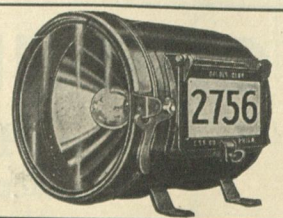


THE PYLE-NATIONAL ELECTRIC HEADLIGHT.

Golden Glow Headlights

A complete line of electrical materials for railroads. See our full page ad in first issue of month.

Electric Service Supplies Co.
Philadelphia, New York, Chicago



SUNBEAM ELECTRIC MANUFACTURING CO.

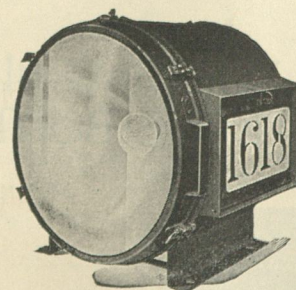
Formerly SCHROEDER HEADLIGHT &
GENERATOR CO.

EVANSVILLE, INDIANA, U. S. A.

*Builders of Locomotive Headlights
Since 1883*

Canadian Representative
TAYLOR AND ARNOLD ENGINEERING
CO., LTD.—MONTREAL, QUE.

General Export Representative
THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA, PA.



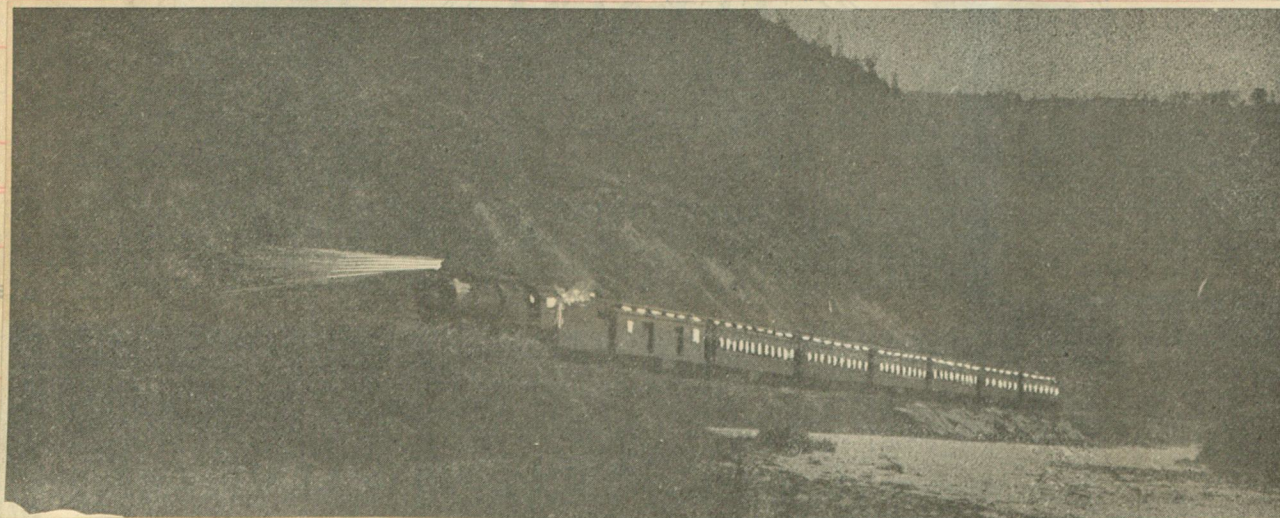
Sunbeam Airtight Headlight
Airtight—Protects the Reflector
Rustproof—Protects the Case

SUNBEAM

The Light of Experience

RAILWAY AGE

March 13, 1926



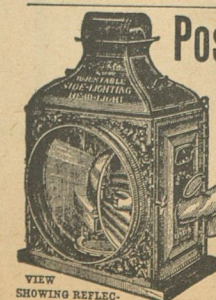
BUY THE BEST.



The experience of the last ten years has abundantly proved that roads using Hall's Headlights have paid less money by one-third for more efficient service than has been paid by roads using the Cheap John Headlights, while the present value of their Headlight Equipment is fully double.

The imitations of other makers demonstrate the superiority of my Headlights.

E. L. HALL,
Corner Evelina and Levant Streets,
PHILADELPHIA



Post & Company's
SIDE-LIGHTING
HEAD-LIGHT.

LARGEST BEST HEAD-LIGHT

AND BEST MADE.
Send for Circular of

Revolving and Stationary LIGHTS

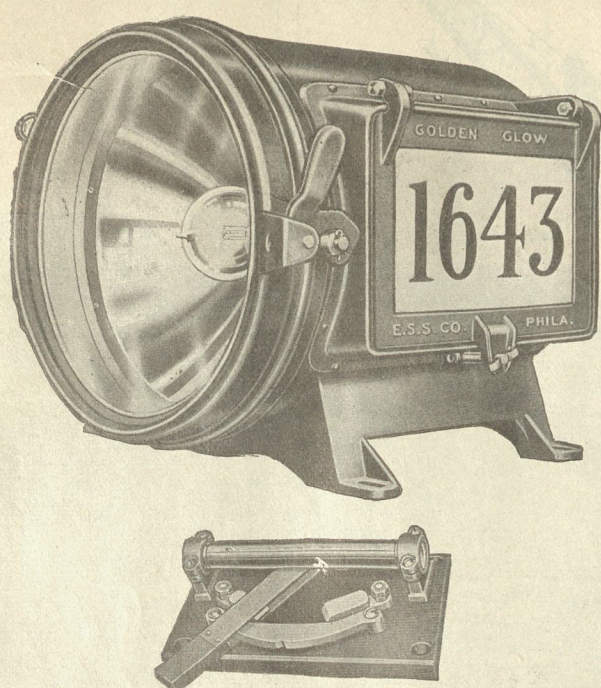
POST & CO.

VIEW
SHOWING REFLEC-
TOR IN POSITION FOR

VIEW SHOWING MANNER of
MOUNTING REFLECTOR.

HEADLIGHT ADVERTISEMENT APPEARING IN JOURNAL AD-
VERTISING PAGES OF 1885

KEYSTONE LOCOMOTIVE HEADLIGHT EQUIPMENT



The Golden Glow Headlight, the Keystone Headlight Switch and the Keystone Turbo-Generator form a high efficiency, low maintenance headlighting system. The Golden Glow Headlight has a ground, mirror glass reflector which, even in a diameter as small as 14 inches, projects ample light to fully and completely meet the requirements of the Interstate Commerce Commission. The reflector, when housed in a standard dust-proof case, is easily kept in this efficient state, as it requires cleaning but once in several months, this consisting of the simple operation of wiping it with a rag.

The Keystone Headlight Switch consists of a blade operating in a plane close to and parallel with the base. It can be operated quickly and easily, even when the operator's hand is enclosed in a glove.

All parts are extremely rugged and accessible,—they're built for hard service.

The Keystone Turbo-Generator supplies a remarkably uniform voltage even under wide changes in steam pressure and load. This is accomplished through an improved valve and speed adjustment that need be inspected but about once a year. With its improved lubrication system a fresh oil supply is not required every one or two months but, only once in about six months. All parts of the generating portion are easily reached which is a feature of value while in service.

Write for Bulletin No. 166

ELECTRIC SERVICE SUPPLIES CO.

Manufacturer of Railway Material and Electrical Supplies

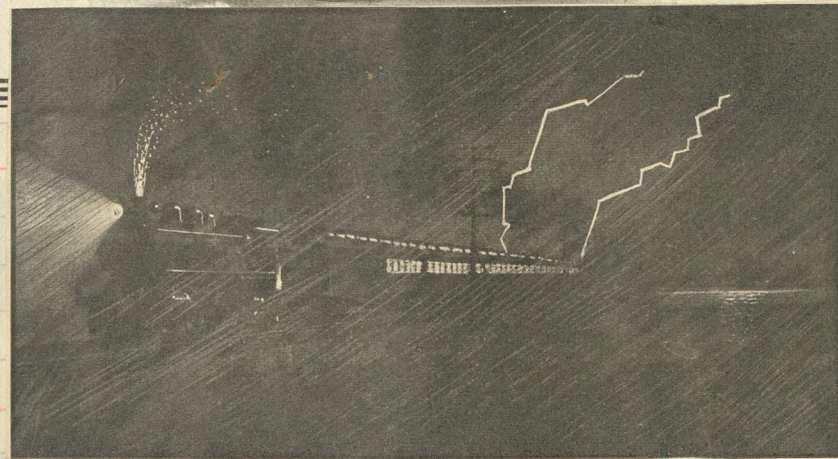
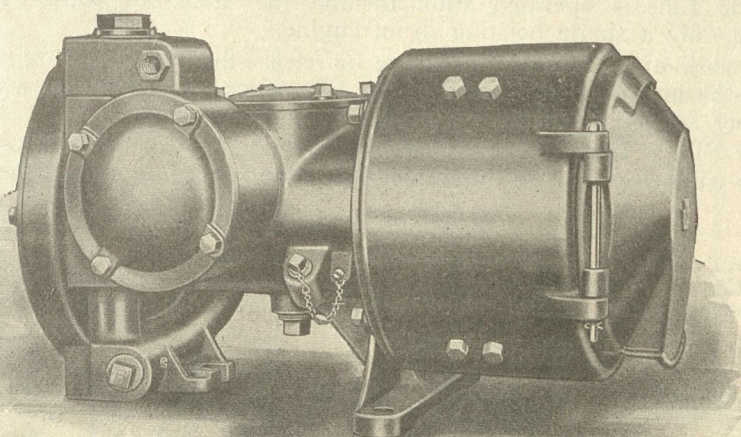
PHILADELPHIA
17th and Cambria Streets

NEW YORK
50 Church Street

CHICAGO
Monadnock Building



Betty Bartholomew of Los Angeles Poses Beside This Old California Headlight to Show Its Comparative Size



JAMES RADLEY & SON,
SUCCESSORS TO
RADLEY & MANDEVILLE and RADLEY & McALISTER M'FG CO.

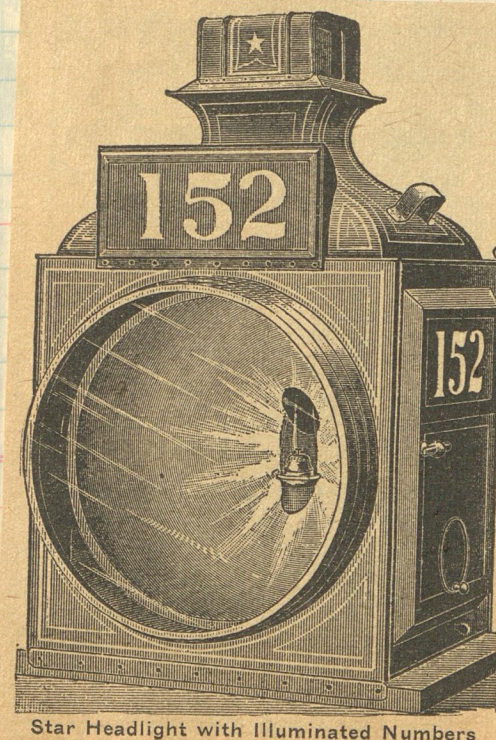
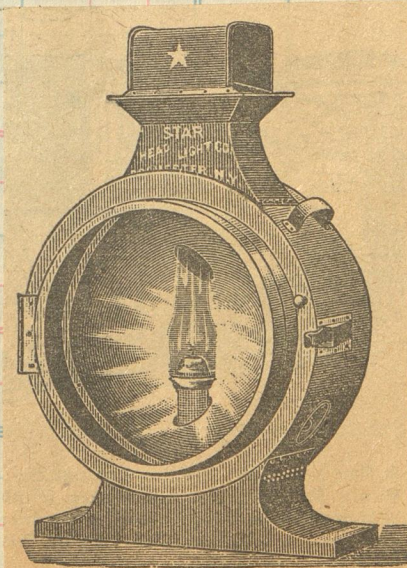
LOCOMOTIVE HEADLIGHTS.

MANUFACTURERS OF
THE BEST
KEROSENE
AND
SPERM OIL
Head Lights
NOW IN USE.

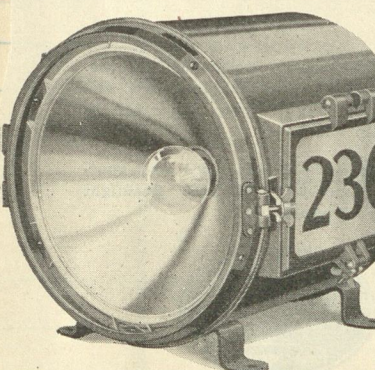
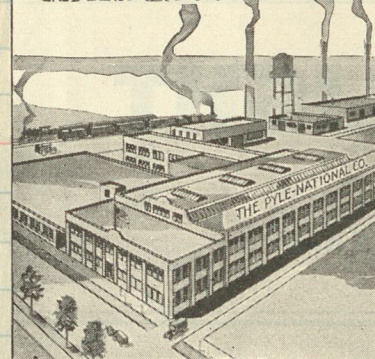
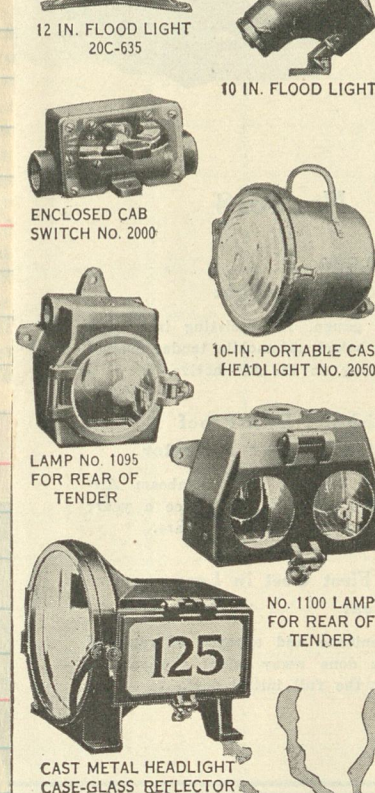
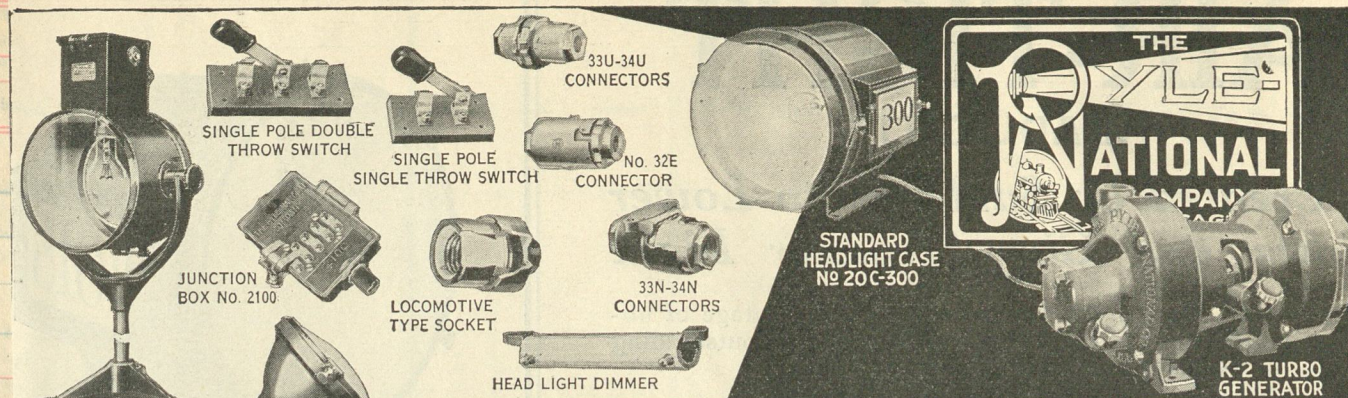
RADLEY & HUNTER SPARK ARRESTERS,
RAILWAY SUPPLIES,
261 PEARL STREET, NEW YORK.

JAMES RADLEY. WILLIAM R. RADLEY.

Sole Manufacturers and Patentees of the Celebrated
GAS BURNING Head Light.
HAS NO EQUAL,
Superior to every other Light heretofore made.



Star Headlight with Illuminated Numbers



Print No. 20-C-230 with numerals. Ask for Print No. 20-C-240 if Case is desired without numerals. Print No. 20-C-270—with angle side number frames.

"PYLE-NATIONAL" "NONGLARE" GLASS REFLECTORS

FOR ECONOMY AND UTILITY

Made in Our Own Factory

THE "NONGLARE" glass reflector eliminates glare and reflects a soft yet penetrating light, meeting in every way standard railway requirements, lasting for years and resisting to the highest degree the attacks of acid, gas and weather. They greatly lessen the maintenance cost of headlights.

Like all of our reflectors for locomotive headlight service, they have a $2\frac{1}{4}$ " focal length. A focal length shorter or longer than $2\frac{1}{4}$ " results in light loss.

These reflectors can be supplied with any new sheet or cast metal headlight case in 12" or 14" size or they may be had, properly mounted, for immediate use in cases already in service.

No. 230 Headlight Case built of Pure Sheet Iron throughout.

The seams are electrically welded. The joints maintain themselves smoke and moisture tight. Malleable frames and No. 250 focusing device. A cast aluminum mounting ring supports the 14" "NONGLARE" GLASS REFLECTOR. Furnished with or without numeral apertures. See illustration below.

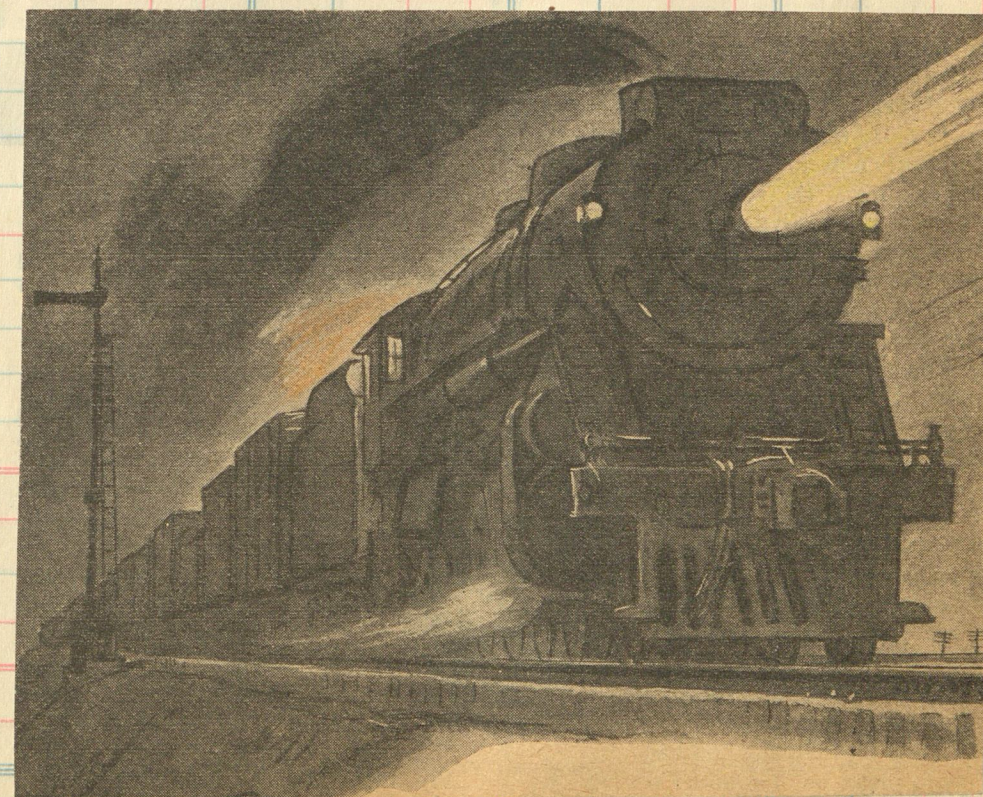
THE PYLE-NATIONAL COMPANY

"The Pioneers and Largest Manufacturers of Locomotive Electric Headlight Sets."

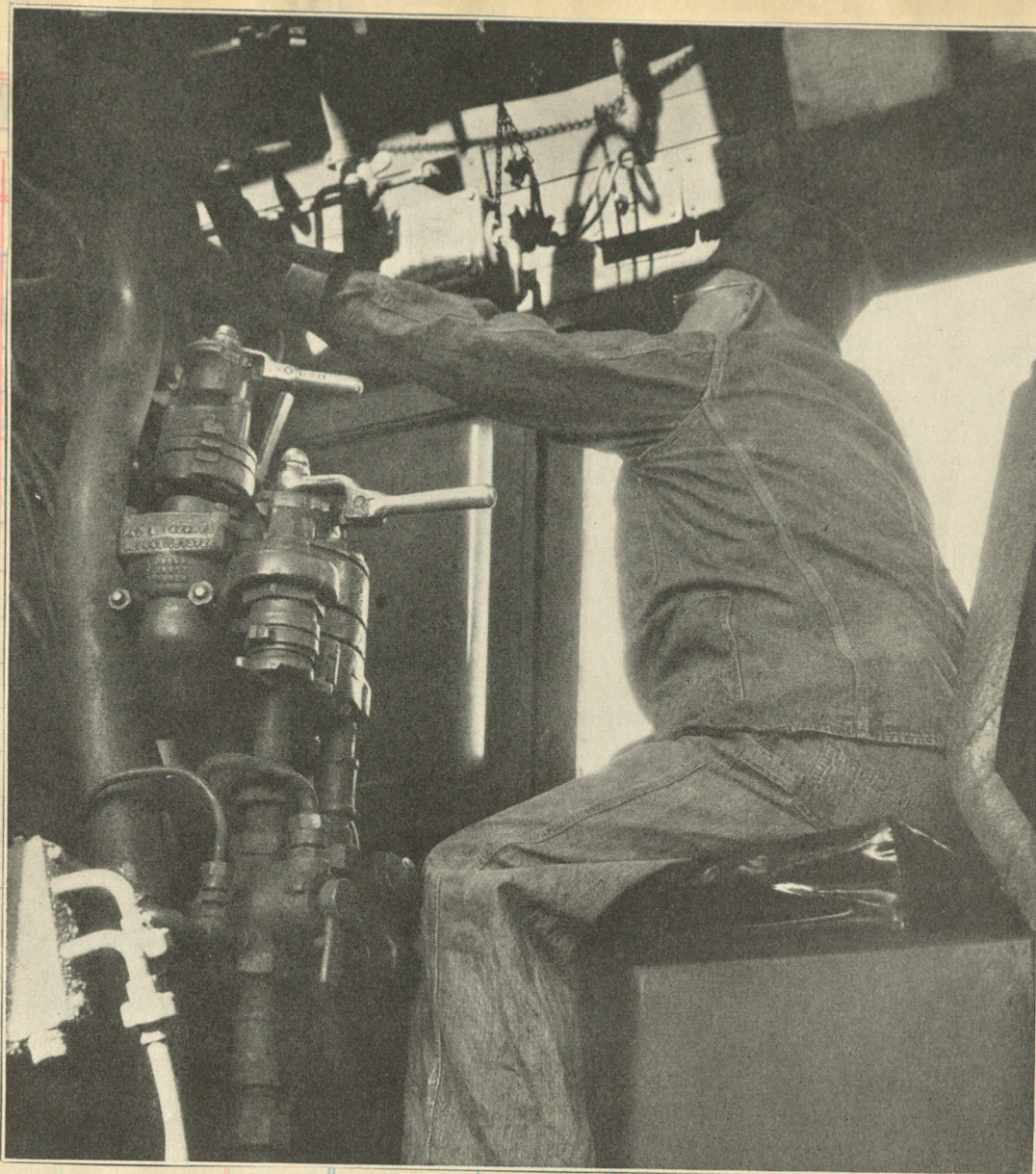
General Offices and Works: Chicago, Illinois

Export
International Railway Supply Co.
30 Church St., New York City

Canada
The Holden Co., Ltd., Montreal



SELLER
DATE
FORM



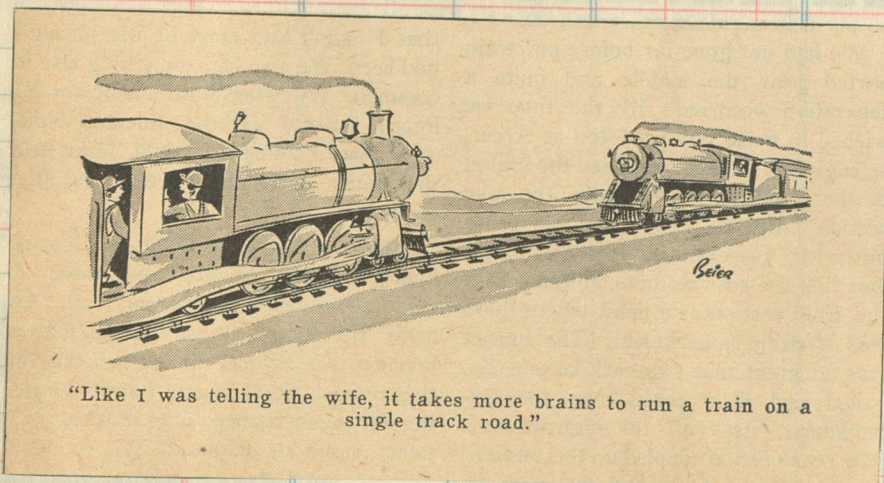
System

The Passenger Engine Speaks

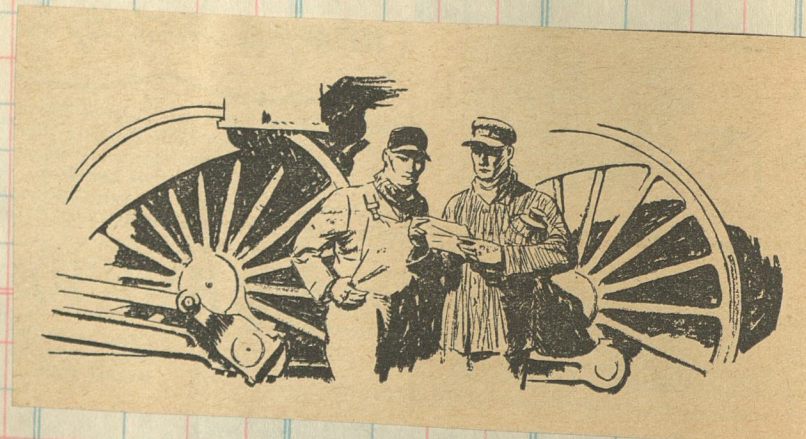
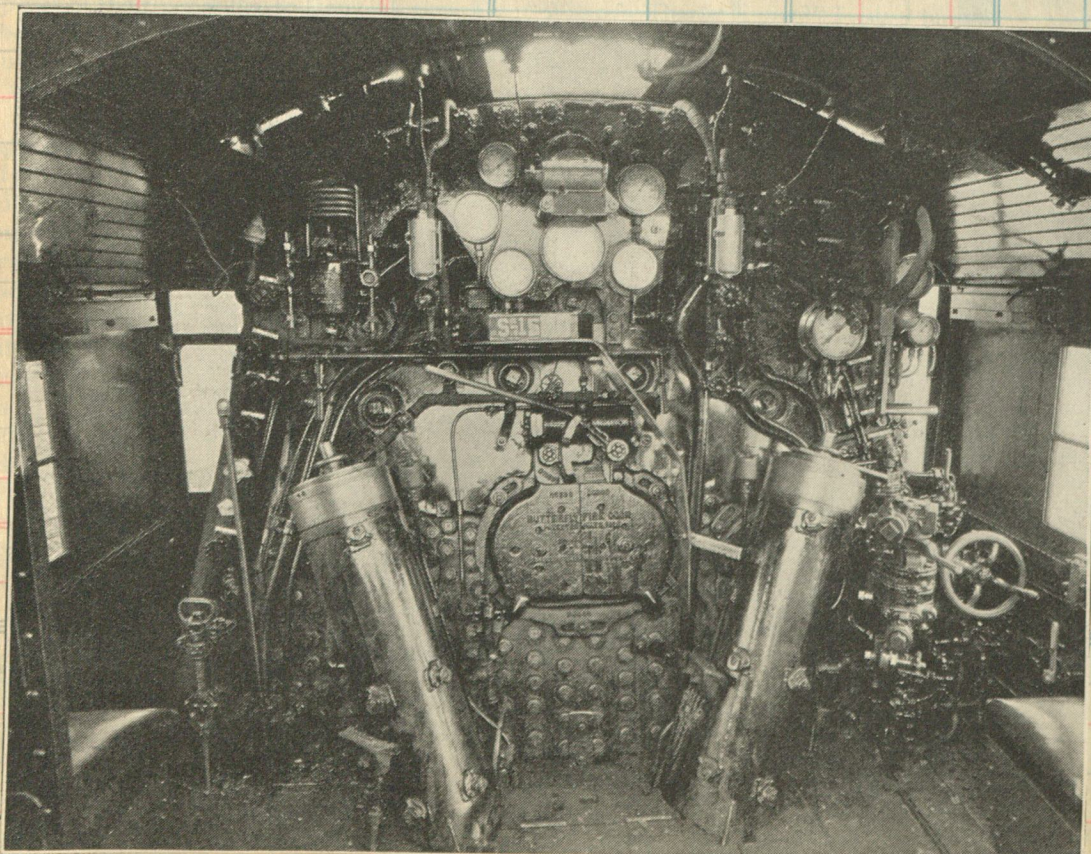
OH, I'm standing in the station with the Limited in tow.
It's dark and cold and snowing hard; the wind's begun to blow.
The hogger climbs into my cab, the air-brakes have been tried;
He is strapping on his goggles, all ready for the ride;
His hand is on the throttle and the tallow's shoveling coal.
My headlight flashes on and my bell begins to toll.
When the skipper comes alongside as mad as he can be
And what he says to my boss, takes the heart clean out of me.

For he hollers that we've got to wait a quarter of an hour
To accommodate some brass-hat. Boy, the old man's look is sour!
The tallow flings the firedoors wide and slams his shovel down,
And says "Oh, why the hell don't they let us out of town?"
So for all those fifteen minutes we wait and wait and wait
For some Congressman or other who doesn't care if we are late.
But I've got to make the time whether we start late or not;
For if I don't at the other end the boss goes on the spot.

Then the old cab signal blows and my throttle is pulled back.
The switch lights change to green, giving us an open track.
The station has moved backward and I'm bumping through the yards
Over ice-encrusted switches, which are also in the cards.
Then we're tearing through the suburbs and out across the plain;
The wind is howling through my wheels, the snow has changed to rain.
The track is wet and slimy and before me is a hill.
Will I make the time? Don't worry, boss, you know darned well I will!
—Ty Price.

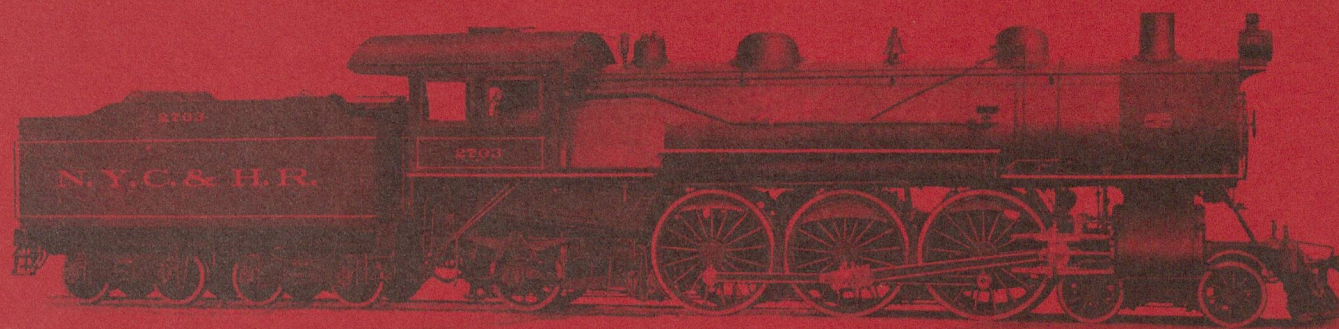


"Like I was telling the wife, it takes more brains to run a train on a single track road."



AMERICAN LOCOMOTIVE COMPANY

NEW YORK CITY



Builders of Locomotives
For All Classes of Service

Pacific Type
Passenger
Locomotives

CUT HERE
To Make
Short Sheet

ka 2353)
A.

Clos. No. Sold Amount Clos. No. Sold Amount Clos. No. Sold

No. Sold Amount Clos. No. Sold Amount Clos. No. Sold Amount

1906

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ROGERS WORKS — Paterson, N. J.

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COOKE WORKS — Paterson, N. J.

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MANCHESTER WORKS — Manchester, N. H.

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Montreal, Canada

AMERICAN LOCOMOTIVE COMPANY

111 BROADWAY NEW YORK.

ANNUAL CAPACITY 3000

OPERATING THE FOLLOWING PLANTS.

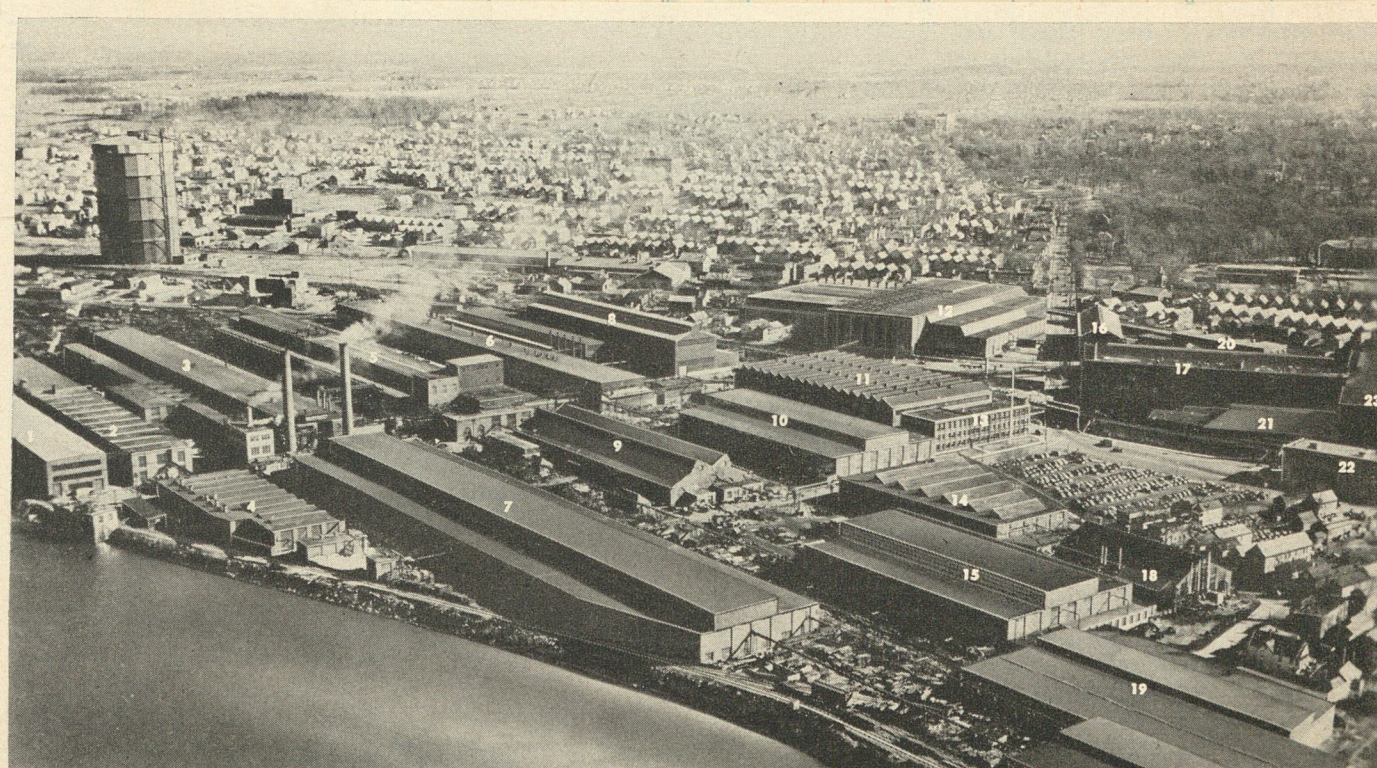
SCHENECTADY WORKS, SCHENECTADY, N.Y. COOKE WORKS, PATERSON, N. J.

BROOKS WORKS, DUNKIRK, N.Y. RHODE ISLAND WORKS, PROVIDENCE, R.I.

RICHMOND WORKS, RICHMOND, VA. DICKSON WORKS, SCRANTON, PA.

ROGERS WORKS, PATERSON, N.J. MANCHESTER WORKS, MANCHESTER, N.H.

PITTSBURG WORKS, ALLEGHENY, PA. MONTREAL WORKS, MONTREAL, CAN.



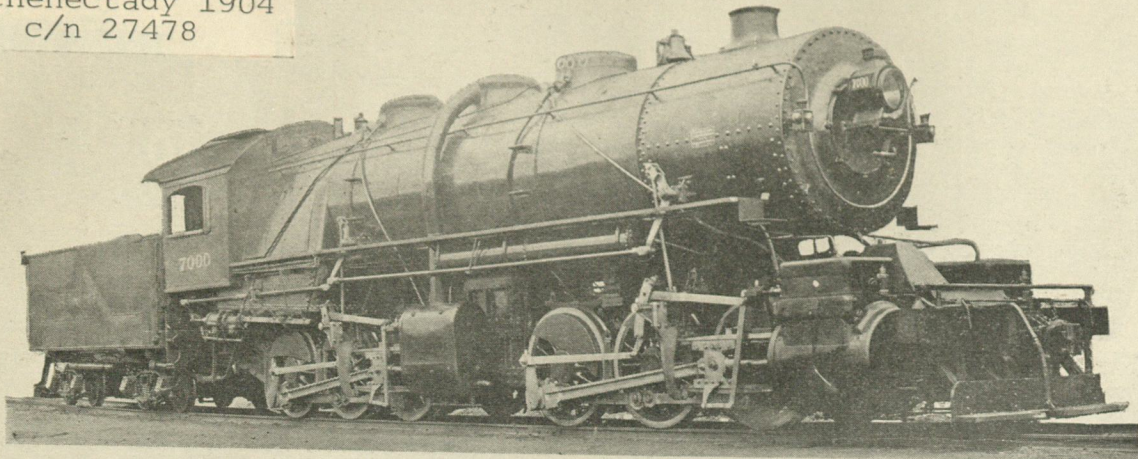
HOME plant of Alco is sandwiched between Mohawk River and residential Schenectady, split by Delaware & Hudson (an Alco user) main line. It covers 112 acres, has 8.3 miles of track, 35 major buildings, and 1,680,000 square feet of manufacturing area.

This was the sign outside the American Locomotive Company's New York City offices after 1901, when the Schenectady Locomotive Works joined a merger to become a bigger, more widespread operation.

1904

SHOWING THE WAY

Schenectady 1904
c/n 27478



Baltimore and Ohio engine 7,000 Alco designed and built, was delivered early in 1904. Not only was this the heaviest and most powerful locomotive ever constructed up to that time, but it was the first Mallet built in this country. For 18 years, engine 7,000 has been constantly "Showing the Way" in heavy duty service with a maintenance cost far below many locomotives of less tractive effort.

The advent of this locomotive ranks with those pioneering achievements which have marked every new era of advancement in American transportation.

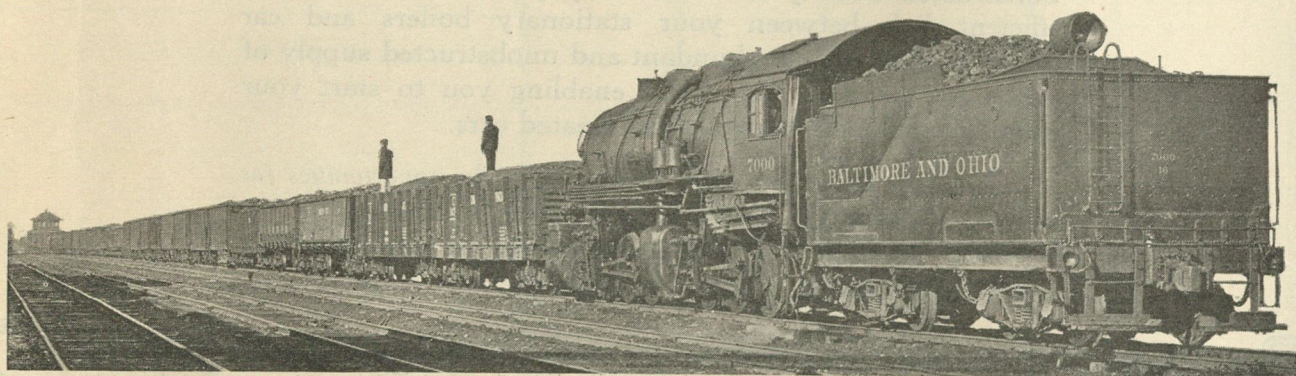
It was the attainment of an ideal which converted a doubtful theory to a practical fact.

It stands today as an impressive tribute to the Baltimore and Ohio Railway, which authorized its construction and which has perpetuated this design in heavy freight service.

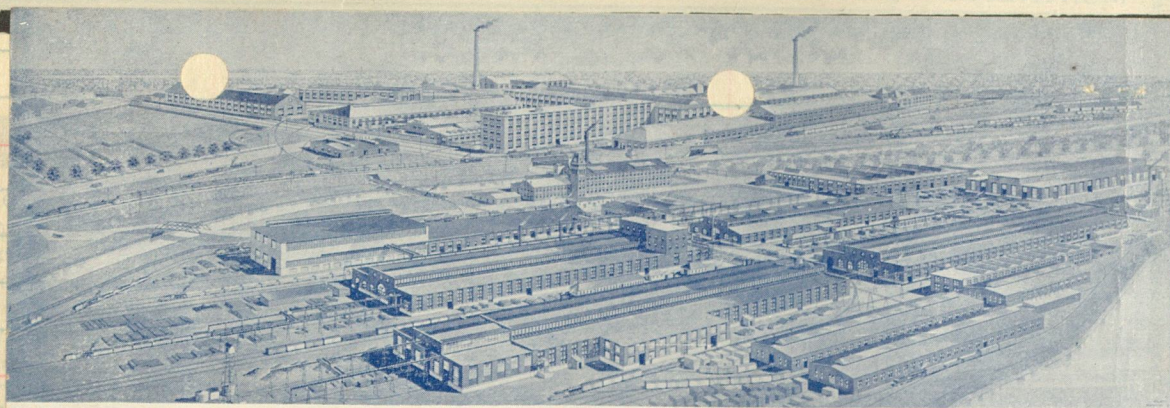
A continuous record of economical performance for more than 18 years should be convincing evidence to you of Alco supremacy.

Making one unit do what two did before was the problem 18 years ago. The problem today is similar on many roads. The solution is

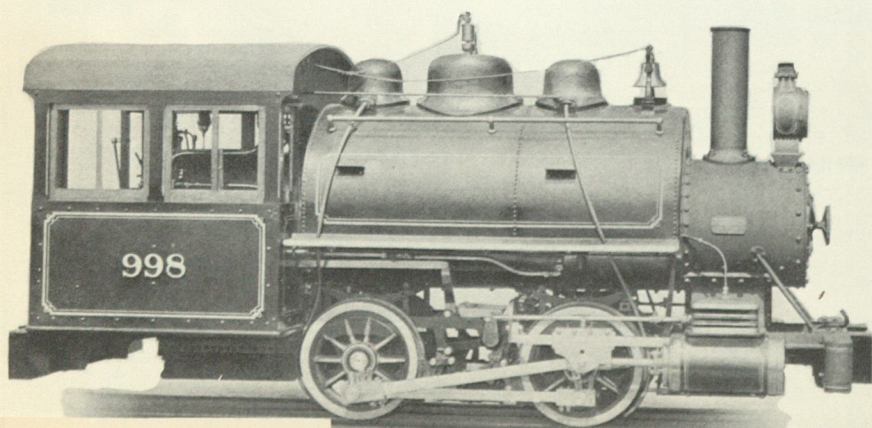
not MORE UNITS OF POWER
but MORE POWERFUL UNITS



AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET, NEW YORK CITY



The Schenectady Locomotive Plant of the American Locomotive Company

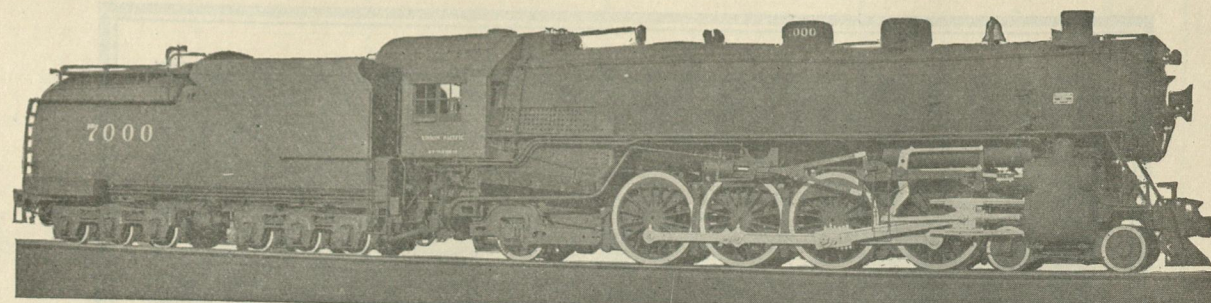


Pittsburgh 1904
c/n 29850

FOUR-WHEEL SADDLE TANK LOCOMOTIVE
Built for American Locomotive Company

Schenectady 1922
c/n 63244

Onward



UNION PACIFIC NO. 7000

Total Weight of Engine, 345,000 pounds; Weight on Driving Wheels 235,000 pounds; Diameter of Driving Wheels 73 inches; Boiler Pressure, 200 pounds; Cylinders, 29 x 28 inches. Maximum Tractive Power, 54,838 pounds.

The remarkable performance of Union Pacific locomotive 7000 is especially noteworthy now when so many roads are faced with the necessity of buying new power.

Recently built by this company from designs and specifications furnished by the Mechanical Department of the railroad, the following record is significant:

On nineteen regular trips on the Wyoming, Western and Colorado Divisions, engine made 62,592 passenger car miles on 338 tons of fuel, or 10.8 lb. of coal per passenger car mile.

Statistics for April on Union Pacific Main Line, average for all passenger engines shows 14.62 lb. per passenger car mile. Similar figure, O-W R. R. & N., 14.38. Engine 7000 up to date shows 26 per cent decrease in fuel consumption per passenger car mile over Main Line performance in April.

Highest speed so far attained 75 miles per hour between Laramie and Rawlins, west-bound, June 9th. At this speed engine rode remarkably smooth, showing a little vertical vibration. Engine takes 12 cars up Sherman Hill working at from 50 to 60 per cent cut-off.

This record of actual service is convincing evidence of the Union Pacific's achievement; and with its accomplishment a distinct advance has been made in locomotive development.

Designed and built to meet a pressing need long felt on the Union Pacific, it has not only supplied that need in fullest measure, but has established standards of operation, performance and economy which are eagerly welcomed by every road confronted with conditions similar to those existing on the Union Pacific.

The performance of the 7000 justifies the faith of its designers—reflects in masterly fashion the purpose of its owners and is a most practical contribution to the transportation industry.

AMERICAN LOCOMOTIVE COMPANY
30 Church Street New York City

AMERICAN LOCOMOTIVE COMPANY

Classification of Locomotives

[WHYTE'S SYSTEM]

040	▲○○○	4 WHEEL	064	▲○○○○○	FORNEY 6 COUPLED
060	▲○○○	6 WHEEL	046	▲○○○○○	" 4 "
0440	▲○○○○	ARTICULATED	066	▲○○○○○	" 6 "
0660	▲○○○○○	ARTICULATED	242	▲○○○○○	COLUMBIA
2440	▲○○○○○	ARTICULATED	262	▲○○○○○	PRAIRIE
080	▲○○○○○	8 WHEEL	282	▲○○○○○	8 COUPLED
240	▲○○○	4 COUPLED	2102	▲○○○○○	10 "
260	▲○○○○	MOGUL	244	▲○○○○○	4 "
280	▲○○○○○	CONSOLIDATION	264	▲○○○○○	6 "
2100	▲○○○○○	DECAPOD	284	▲○○○○○	8 "
440	▲○○○○○	8 WHEEL	246	▲○○○○○	4 "
460	▲○○○○○	10 "	266	▲○○○○○	6 "
480	▲○○○○○	12 "	442	▲○○○○○	ATLANTIC
042	▲○○○	4 COUPLED & TRAILING	462	▲○○○○○	PACIFIC
062	▲○○○	6 " " "	444	▲○○○○○	4 COUPLED DOUBLE ENDER
082	▲○○○○○	8 " " "	464	▲○○○○○	6 " " "
044	▲○○○	FORNEY 4 COUPLED	446	▲○○○○○	4 " " "

The locomotive classification adopted by the American Locomotive Company is based on the representation by numerals of the number and arrangement of the wheels commencing at the front. Thus, 260 means a Mogul, and 460 a ten-wheel engine, the cipher denoting that no trailing truck is used.

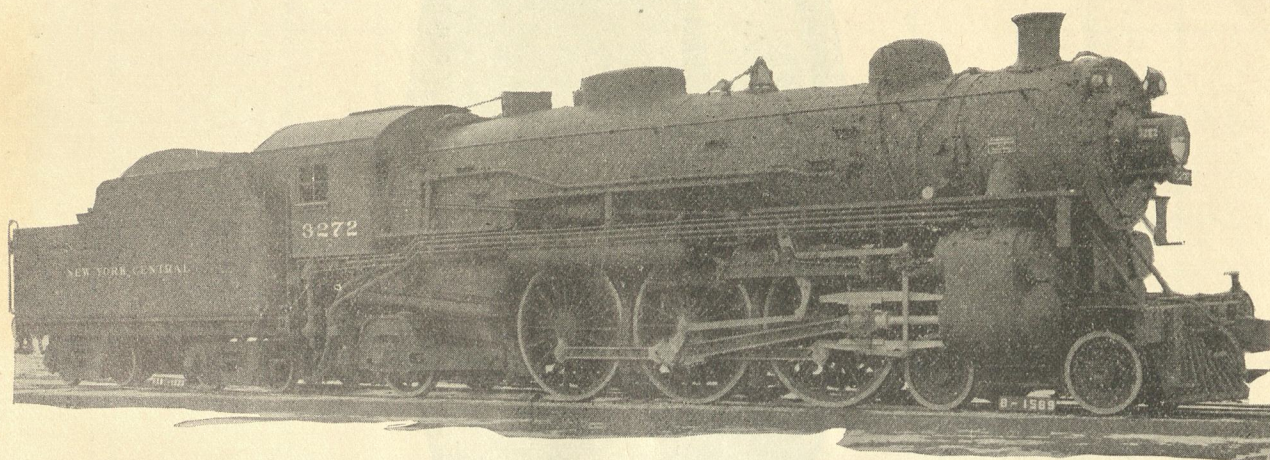
The total weight is expressed in 1,000 of pounds. Thus, an Atlantic locomotive weighing 176,000 pounds would be classified as a 442-176 type. If the engine is compound, the letter C should be substituted for the dash; thus, 442 C 176 type. If tanks are used in place of a separate tender, the letter T should be used in place of the dash. Thus a double-end suburban locomotive with two-wheeled leading truck, six drivers and six-wheeled rear truck, weighing 214,000 pounds, would be a 266 T 214 type.

[48]

Brooks 1923
c/n 63954

Clos. No. Sold

Showing the Way



In a feature article in its September number, the New York Central Lines Magazine points with pride to the record of locomotive No. 3272, which made 211,637 miles from March, 1923, to July, 1924, when it was sent to West Albany for general repairs. The following additional comments made in the article are of interest:

"This is one of the class K-3-q Pacific type locomotives built at the Dunkirk works of the American Locomotive Company and first placed in service in March, 1923. Locomotive was in regular through service between Harmon and Syracuse on trains 59 (Western New York Express) and 58 (Metropolitan), and this is its first general repair. In the Harmon-Syracuse service the locomotive made as high as 15,200 miles in one month."

This record is a highly significant one for two reasons. The remarkable progress made by the Central in successfully handling these famous trains over two hard divisions with one unit where two were formerly required, is in itself a notable and essential economy.

The daily delivery of such an outstanding performance, over long periods without interrupted schedules, serves to focus attention on, and gives particular emphasis to, the need on other roads for locomotives of equal capacity for sustained effort.

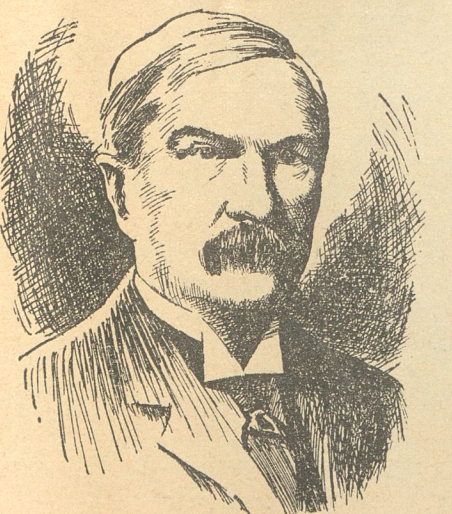
Motive power that embodies these advantages will ultimately become the determining factor in power selection, and every road must eventually decide whether it can afford to continue locomotives in service that do not possess them in fullest measure.

AMERICAN LOCOMOTIVE COMPANY

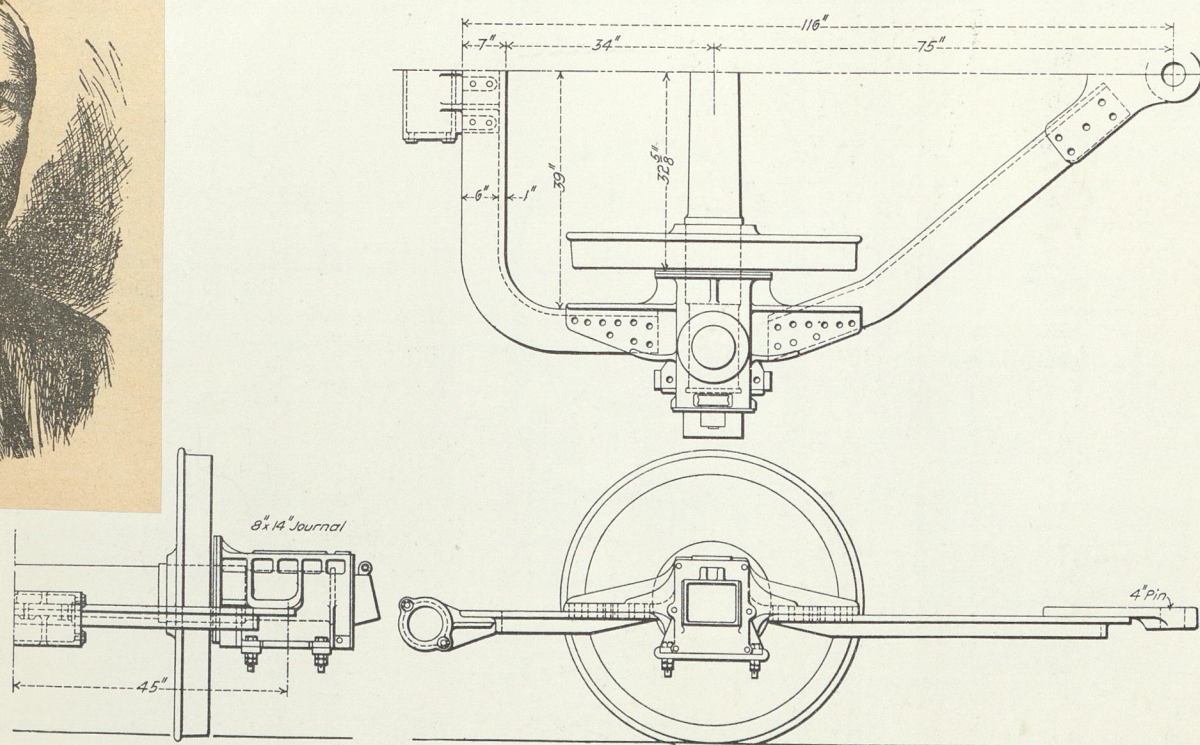
30 Church Street

New York City

Below: Father of the cross-compound locomotive was Albert J. Pitkin, Schenectady Works Superintendent, who became President of Alco in 1904



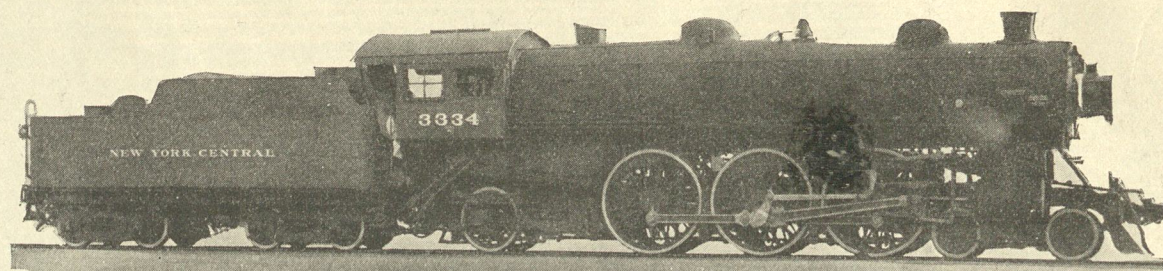
AMERICAN LOCOMOTIVE COMPANY



PACIFIC TYPE PASSENGER LOCOMOTIVE
Trailing Truck with Outside Bearings
[1923]

First applied to N.Y.C. & H.R. #2799 in December 1903

Brooks 1918
c/n 58109



"The New York Central Railroad established a new world's record for a long distance haul of a passenger train by a single locomotive with the arrival at Harmon, N. Y., on Sunday, September 13, of the Lake Shore Limited, No. 22, drawn by Engine No. 3334.

"This locomotive, whose number will go down into history along with that of the New York Central's famous '999,' performed the hitherto unprecedented performance of pulling a train a total of close to 2,000 miles in a continuous round trip between Harmon and Chicago.

"No such record long haul by any one locomotive using coal as fuel has ever been made or attempted previously in American railroad history and is believed to have no counterpart in engine performance on any railroad in the world.

"Following its initial record performance, No. 3334 on the next consecutive run of the Lake Shore Limited further added to its record by making a second continuous round trip between Harmon on September 14 and arriving back at this terminal point on September 16.

"No. 3334 is a Pacific K3-N type of locomotive. It was built by the American Locomotive Company at its Brooks Works and put into service in January, 1918. An outstanding feature of the remarkable record made by this locomotive is that it was not constructed especially for long distance haul and received no special conditioning to make the test trips."

—New York Central Lines Magazine—October, 1925.

This performance should impress those who seek the utmost in design and construction, with the desirability of Alco qualities, and you may profitably consider whether or not you can afford to invest in locomotives that do not embody them.

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET

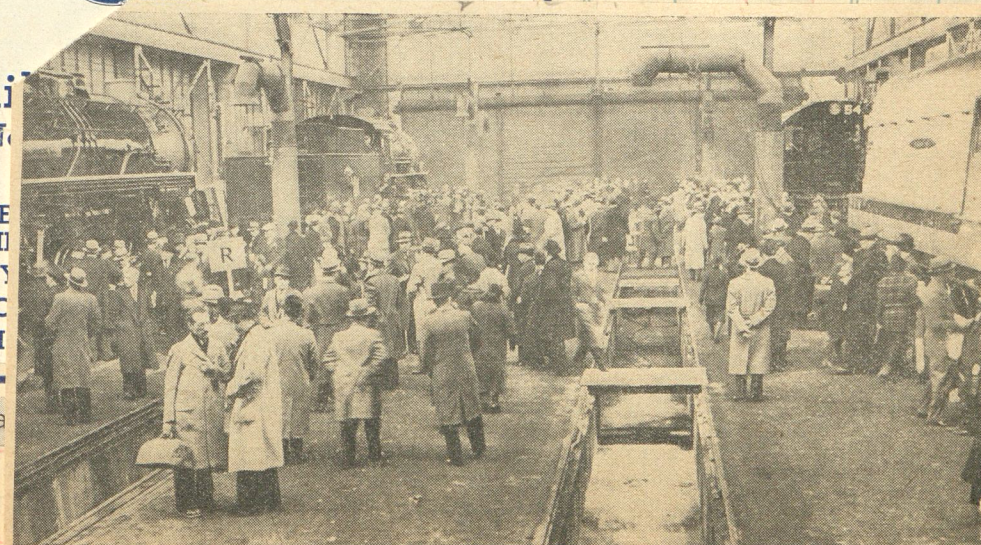
NEW YORK CITY

A Cordial Invitation to Visit
and Inspect the Schenectady
Locomotive Plant of the
American Locomotive
Company at Schenectady,
Sunday, April 11, 1937

Third Rail
of the N

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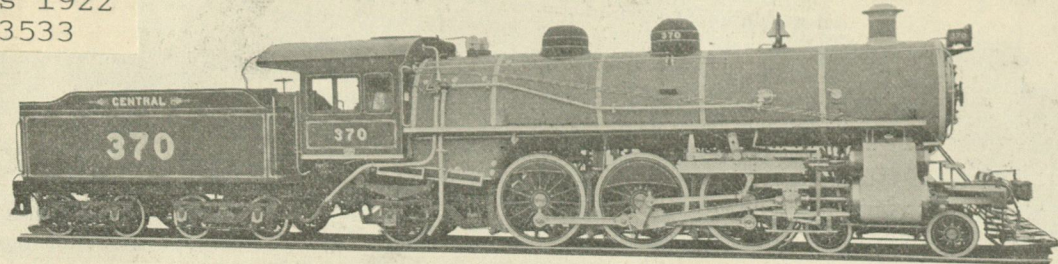
Ma



Wheeling & Lake Erie Berkshire, Bessemer switcher, Diesel shunting engine and Hiawatha Atlantic were high points in 1937 fan trip to Schenectady

IN FAR AWAY BRAZIL

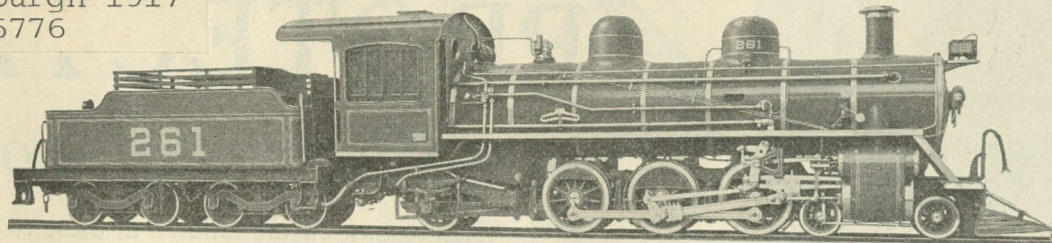
Gauge 5'3"
Brooks 1922
c/n 63533



BUILT FOR THE CENTRAL RAILWAY OF BRAZIL

Weight of Engine, 210,000 pounds; Weight on Driving Wheels, 122,100 pounds; Diameter of Driving Wheels, 64 3/4 inches; Boiler Pressure, 175 pounds; Cylinders, 21 1/2 x 28 inches; Maximum Tractive Power, 28,300 pounds.

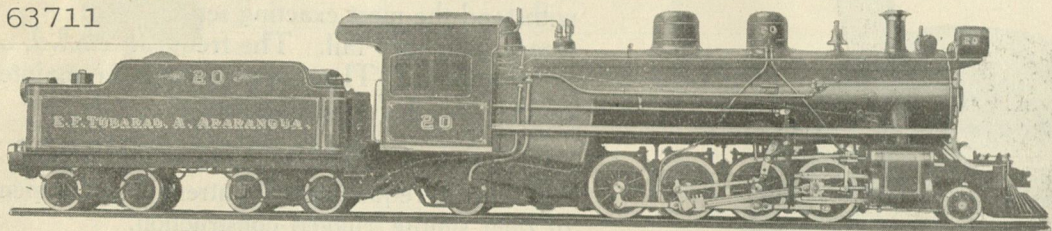
Meter gauge
Pittsburgh 1917
c/n 56776



BUILT FOR THE MOGYANA RAILWAY

Weight of Engine, 113,000 pounds; Weight on Driving Wheels, 73,000 pounds; Diameter of Driving Wheels, 45 inches; Boiler Pressure, 170 pounds; Cylinders 17 1/2 x 20 inches; Maximum Tractive Power, 19,700 pounds.

Meter gauge
Montreal 1922
c/n 63711



BUILT FOR THE E. F. TUBARAO A ARARANGUA

Weight of Engine, 120,000 pounds; Weight on Driving Wheels, 84,800 pounds; Diameter of Driving Wheels, 42 inches; Boiler Pressure, 180 pounds; Cylinders 16 x 22 inches; Maximum Tractive Power, 20,500 pounds.

These three Alco designed and built locomotives are on exhibition at the Brazilian Centennial now being held at Rio de Janeiro, Brazil.

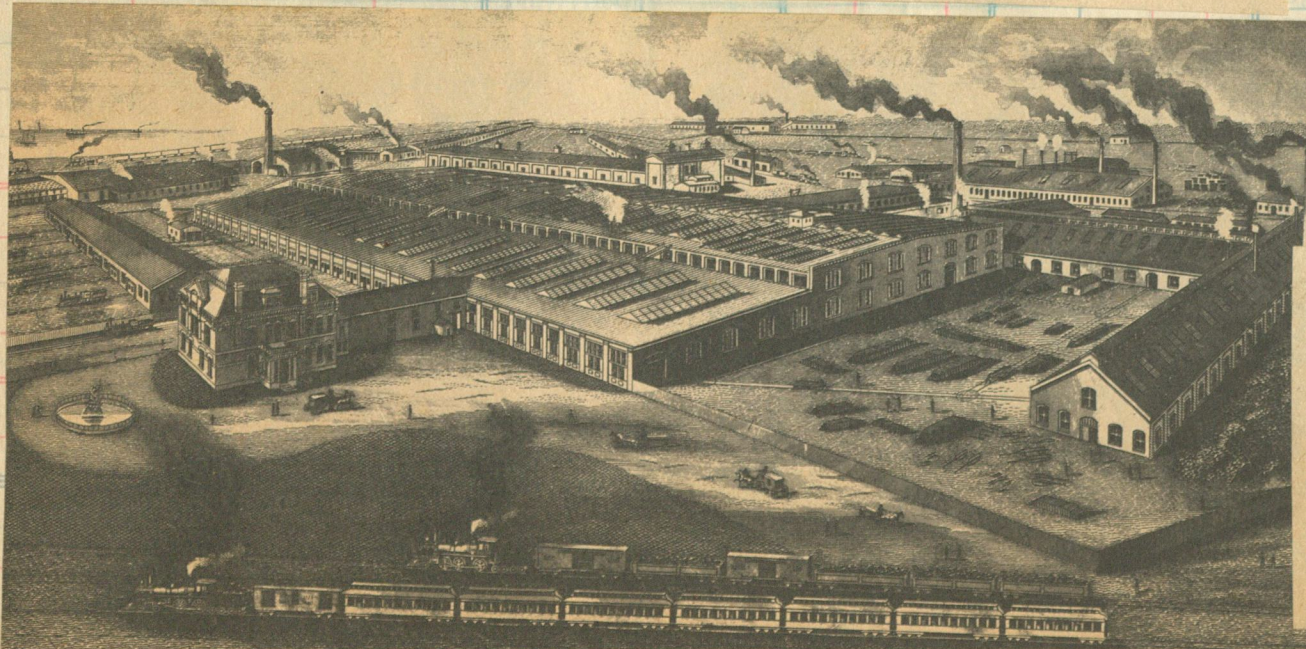
If there is one outstanding thought conveyed here it is the flexibility of Alco service.

In far away Brazil, as in other distant countries, conditions affecting locomotive performance are widely different than in our own.

The selection of Alco design and construction in this instance is merely added proof that their advantages are world wide in application.

AMERICAN LOCOMOTIVE COMPANY
30 Church Street
New York City
1923

BROOKS LOCOMOTIVE WORKS

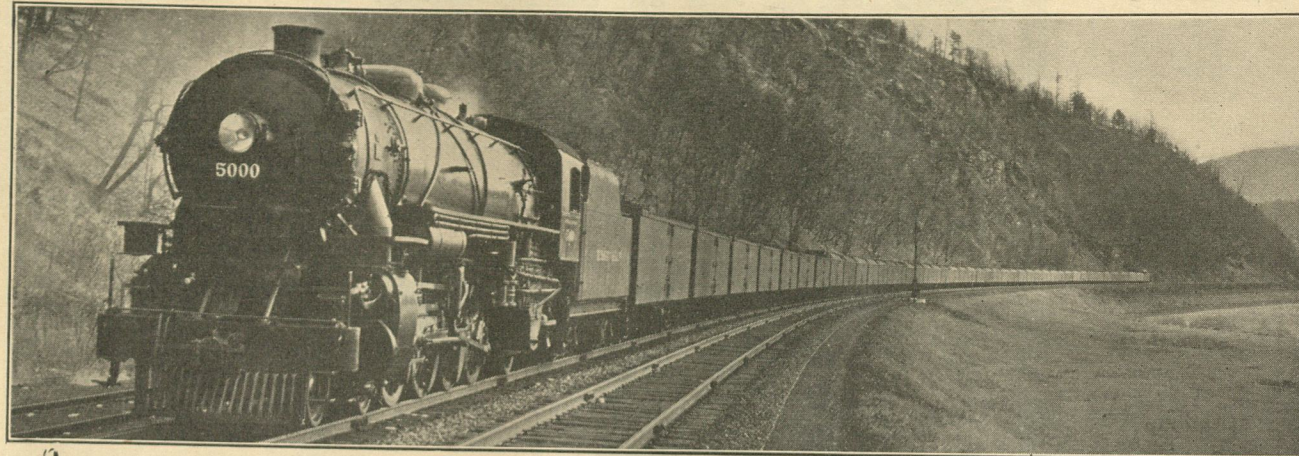


Old print gives a bird's-eye view of the busy Brooks plant as it appeared in 1888, the year after Mr. Brooks' death.

SHOWING THE WAY

LEHIGH VALLEY MOUNTAIN TYPE 3 CYLINDER LOCOMOTIVE

Brooks 1924
c/n 64801



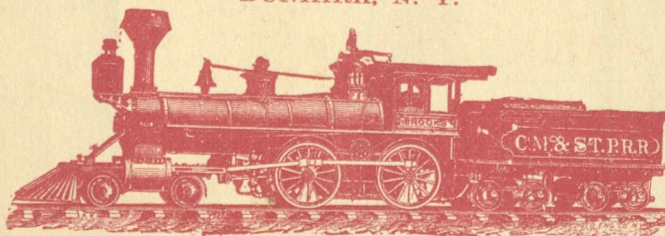
This locomotive continues in matchless fashion to ratify its endorsement by Lehigh Valley officials, as evidenced by their second order for five more of the same type and class, recently received.

The 5000 alternates daily on milk trains Nos. 21 and 38, between Lehigh and Sayre, a distance of 150 miles, which is an unusually severe and exacting assignment.

The continuity of its performance at a greatly reduced cost over former methods of handling these trains, indicates unmistakably that not only the basic factors of strength, utility and economy are embodied in this locomotive to a marked degree, but in a very practical way is proving that in developing the 3 cylinder principle Alco Engineers have forged a new link in the chain of transportation progress.

AMERICAN LOCOMOTIVE COMPANY
30 Church Street
New York City

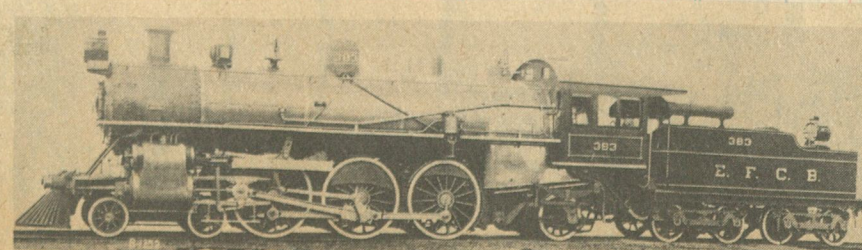
BROOKS LOCOMOTIVE WORKS DUNKIRK, N. Y.



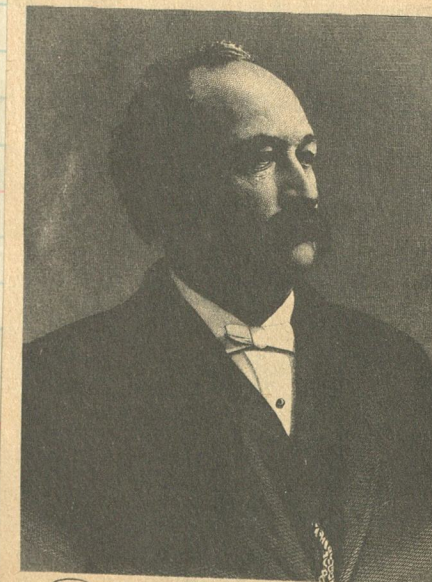
Orders Solicited for Locomotives Adapted for Every Class of Railway Service.

M. L. HINMAN, Sec'y & Treas.

H. G. BROOKS, Pres't & Sup't.



In 1901, Brooks Locomotive Works became affiliated with Alco, but continued its production in full swing at the Dunkirk plant. This loco was built there in 1912 for E.F.C.B., the Central Railway of Brazil, and completed in 24 days. Builder's photo shows 68" drivers and 21 1/2 x 28" cylinders; weight was 99 tons.



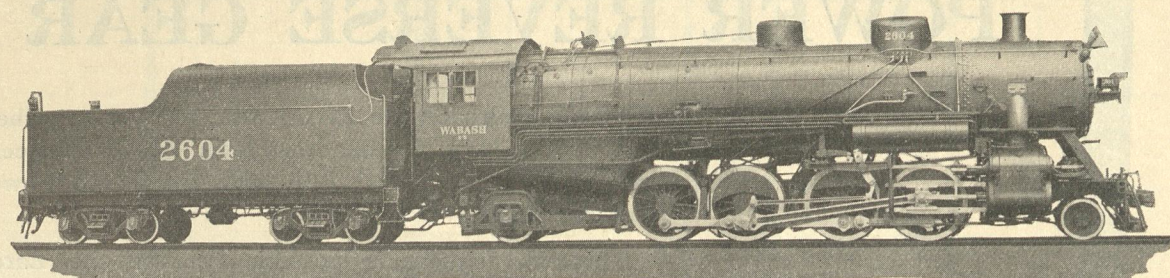
Truly Yours
H. G. Brooks.

Courtesy of Dunkirk (N.Y.) Free Library

16 1828-1889

Clos. No. Sold Amount

Showing the Way



THREE-CYLINDER LOCOMOTIVE BUILT FOR THE WABASH RAILWAY

Weight on Driving Wheels, 252,000 pounds; Weight of Engine, 342,000 pounds; Three Cylinders, 1-23x28, 2-23x32 inches; Diameter of Driving Wheels 64 inches; Boiler Pressure, 200 pounds; Maximum Tractive Power, 64,600 pounds.

At a meeting of the American Society of Mechanical Engineers, Chicago Section, held at Chicago, February 24th, Mr. W. A. Pownall, Mechanical Engineer of the Wabash, made the following statements:

"These engines have now been in continuous service for about nine months. The opinions of the road foremen of engines and fuel supervisors have been asked for from time to time and I quote a few:

'At high or low speeds the three-cylinder engine gets the train going quicker and rides better than the two-cylinder engine.'

'It is easier for a three-cylinder engine to start a train without taking slack, and therefore causes less damage to draft gears.'

'Any train that can be started can be run at a more uniform rate of speed and handled better over the hills.'

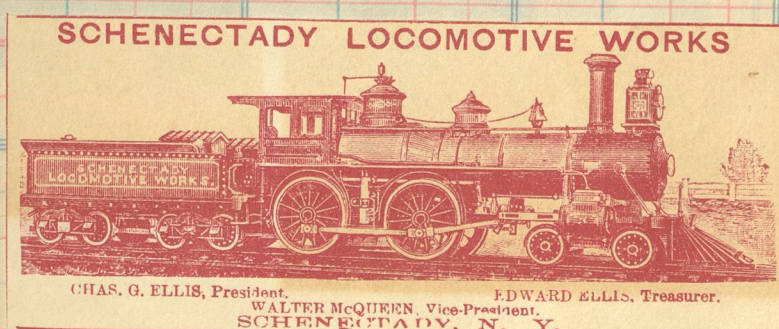
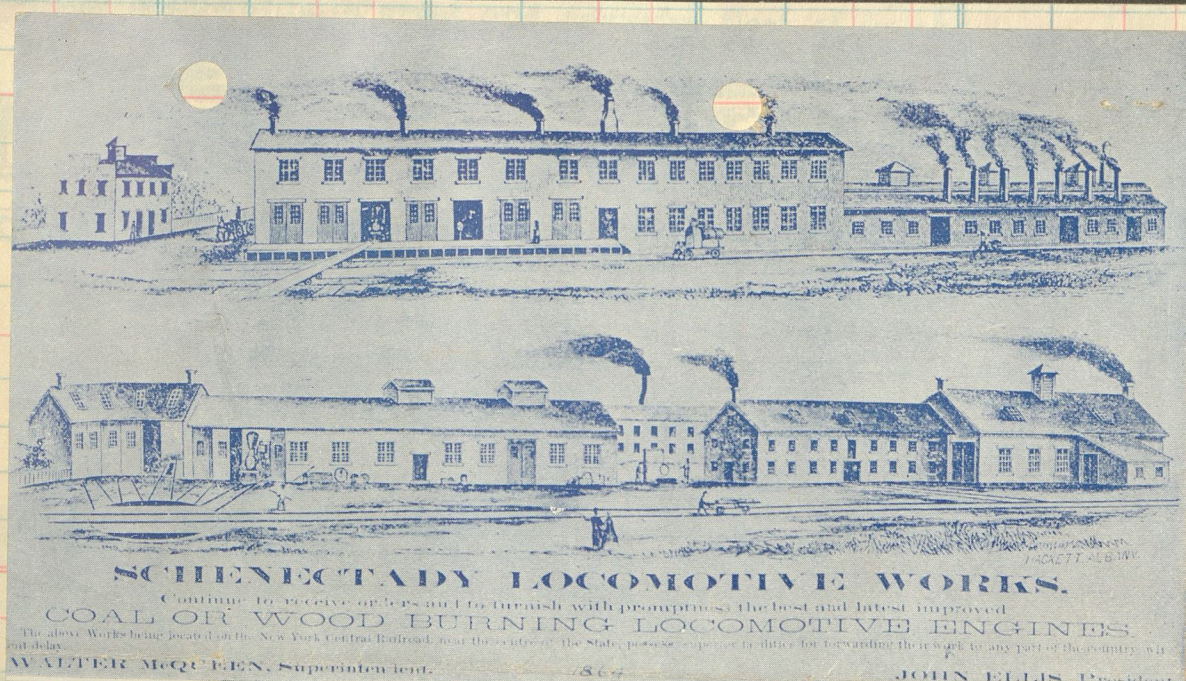
'There is a saving in fuel and water over the two-cylinder engine.'

'Train can be handled at 33 to 35 per cent cut-off where a two-cylinder would have to be worked at or near 50 per cent cut-off to handle same train.'

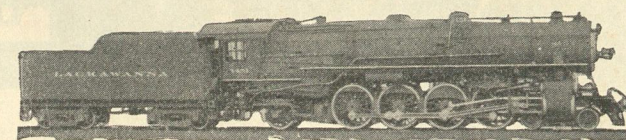
'The three-cylinder engines have been run an average of 4,492 miles per engine per month. Twelve of the two-cylinder engines averaged 4,164 miles per month on an adjacent division.'

'Maintenance will not differ materially from the two-cylinder type. It will possibly be less over a long period.'

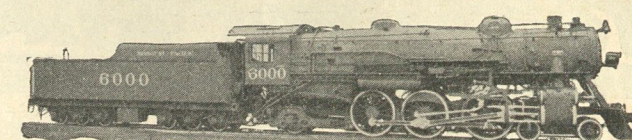
AMERICAN LOCOMOTIVE COMPANY
30 Church Street New York City



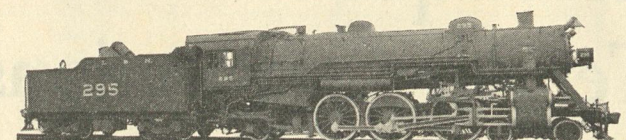
1925 3 Cylinder Locomotives



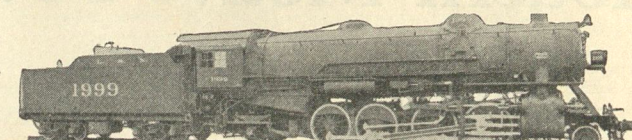
Lackawanna



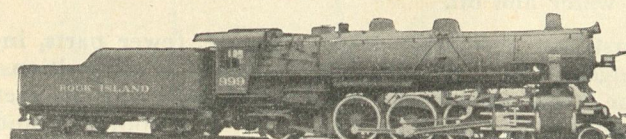
Missouri Pacific



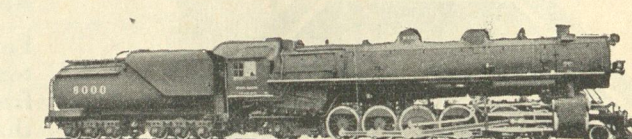
Louisville & Nashville



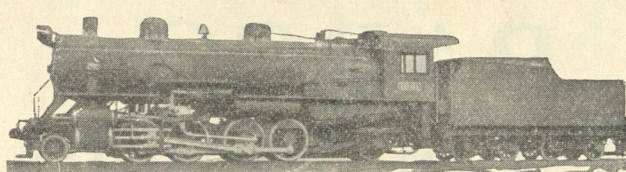
Louisville & Nashville



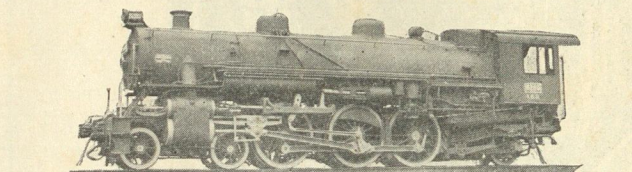
Rock Island



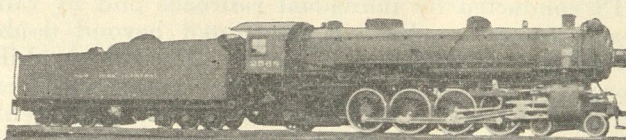
Union Pacific



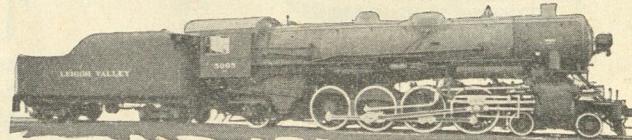
South Manchuria



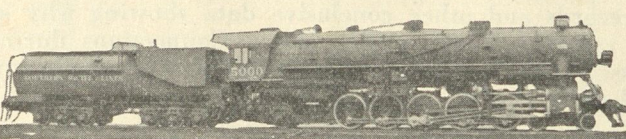
I. G. Ry. of Japan



New York Central



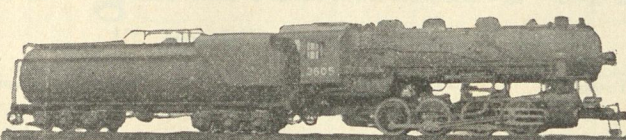
Lehigh Valley



Southern Pacific



Missouri Pacific

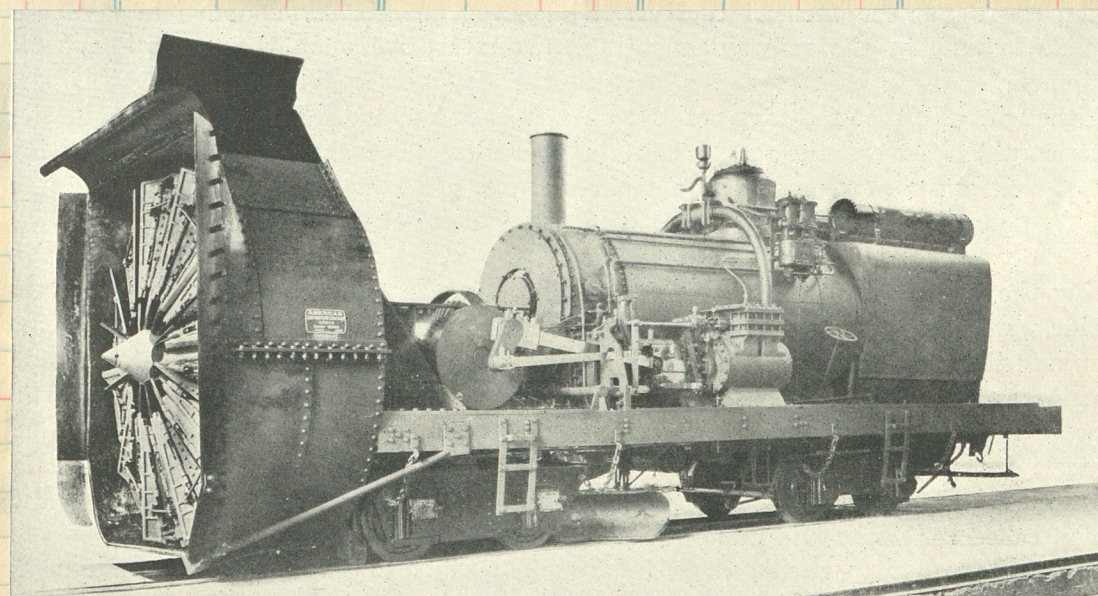


New Haven

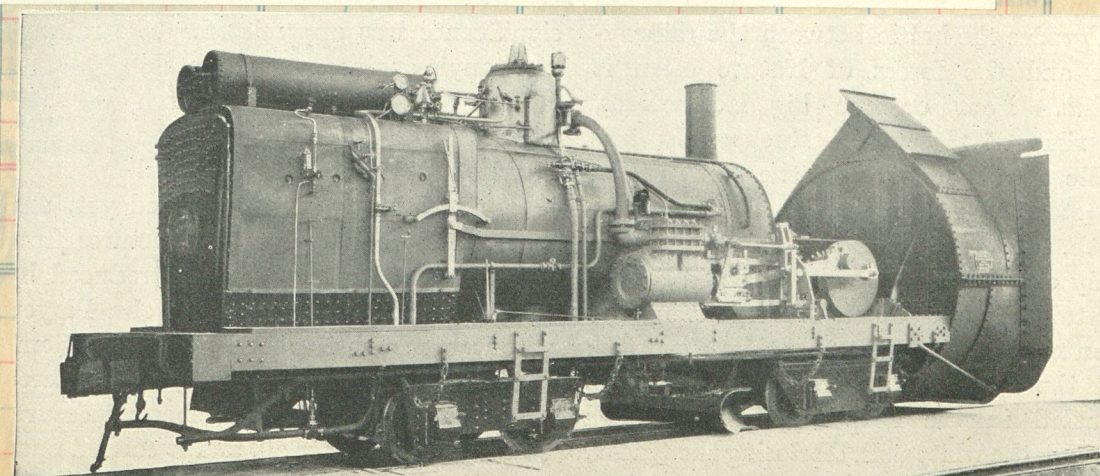


Wabash

AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET, NEW YORK CITY

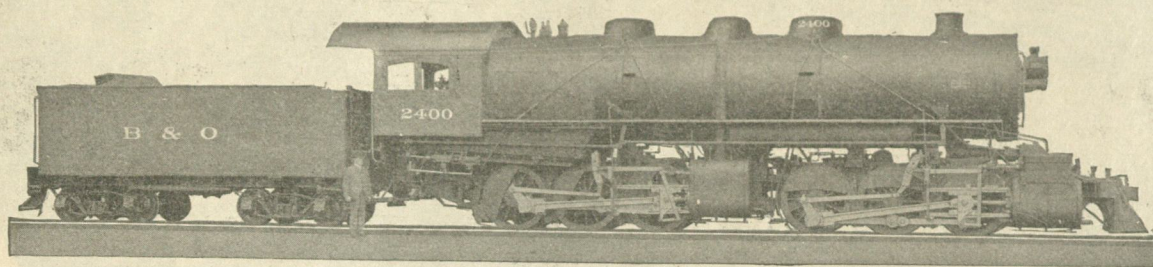


By permission of the American Locomotive Co.
FRONT VIEW OF UNHOUSED ROTARY, SHOWING SCOOP WHEEL AND ITS DRIVING GEAR.



By permission of the American Locomotive Co.
THE ROTARY UNHOUSED, SHOWING BOILER AND ENGINE FOR DRIVING THE SCOOP WHEEL.

WALSCHAERT VALVE GEAR



In 1904, the American Locomotive Company built for the Baltimore & Ohio Railroad the first Mallet type articulated compound locomotive in the United States.

This locomotive was equipped with the Walschaert Valve Gear.

It was the first large modern locomotive in the United States to be so equipped, and marked the initial effort of the American Locomotive Company toward the general adoption of this gear.

In June, 1905, the American Engineer & Railroad Journal made the following statement in an article entitled "Walschaert vs Stephenson Valve Gear":

"It is understood that the Walschaert gear was applied on the Lake Shore & Michigan Southern at the suggestion of the American Locomotive Company, to whom belongs the credit of the present tendency towards the introduction of this gear in this country."

This marked another great step in the efforts of the American Locomotive Company to advance locomotive development.

AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET, NEW YORK

Ry Age Dec 12, 1919

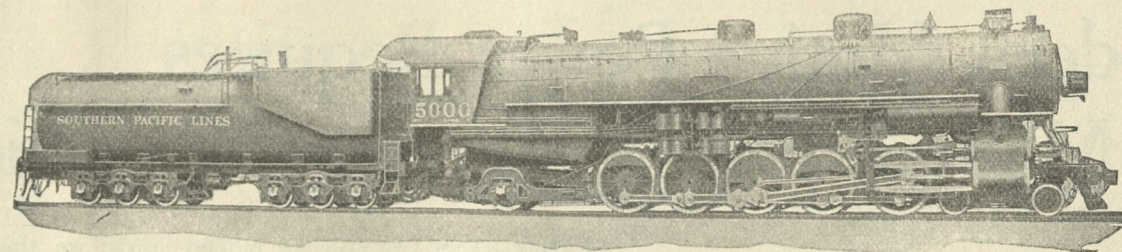
March 13, 1926

RAILWAY AGE

57

Schenectady
c/n 66107

Showing the Way



Three Cylinder Locomotive Built for the Southern Pacific Lines
"Southern Pacific Type"

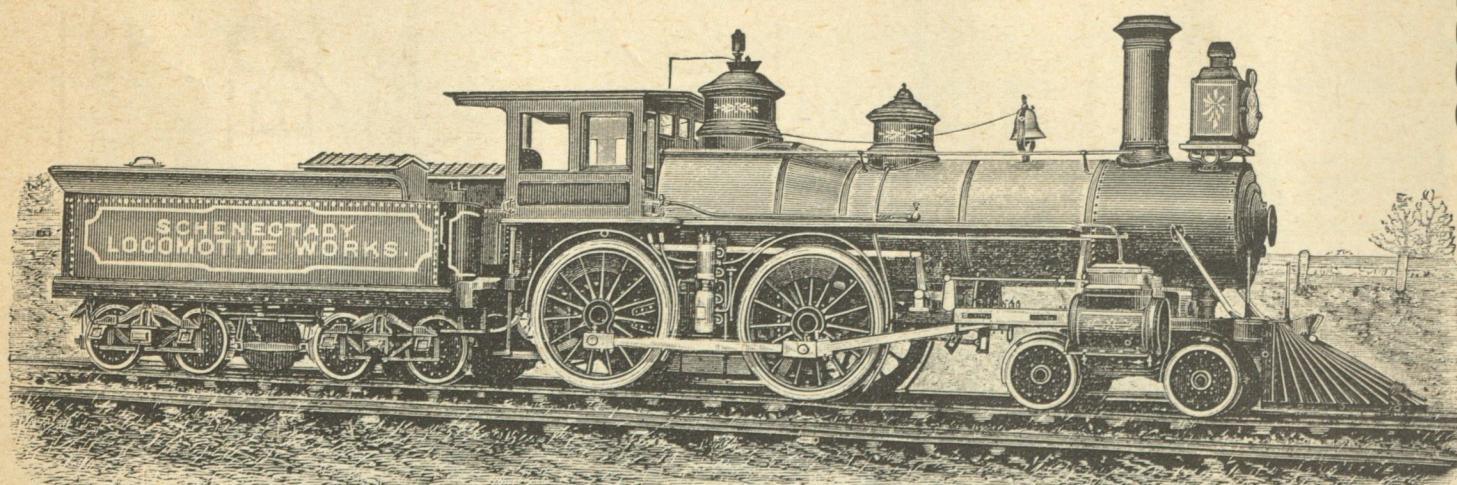
Weight on Driving Wheels, 316,000 pounds; Weight of Engine, 442,000 pounds; Three cyls. 1-25x28, 2-25x32 inches; Diameter of Driving Wheels, 63½ inches; Boiler Pressure, 225 pounds; Maximum Tractive Power with Booster, 95,700 pounds (70% cutoff)

Sixteen of these locomotives were delivered early in 1925.

So successful have these engines proven in service that the Southern Pacific recently placed an order for 23 more.

Such a repeat order indicates with particular emphasis the proven success of the Alco Three Cylinder Locomotive on this road.

AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET
NEW YORK CITY



THE SCHENECTADY LOCOMOTIVE WORKS.
SCHENECTADY, N. Y.
LOCOMOTIVE ENGINES
FOR BROAD OR NARROW GAUGE RAILROADS.

CHARLES G. ELLIS, President. WALTER McQUEEN, Vice-President. EDWARD ELLIS, Treasurer.

1901

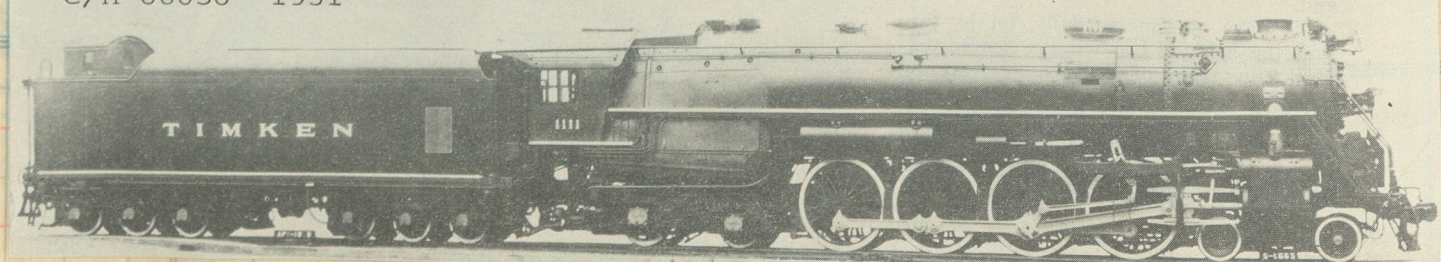
On June 24, The Schenectady Locomotive Works merged with several other companies. They were:

PREDECESSORS WHICH FORMED THE AMERICAN LOCOMOTIVE CO.

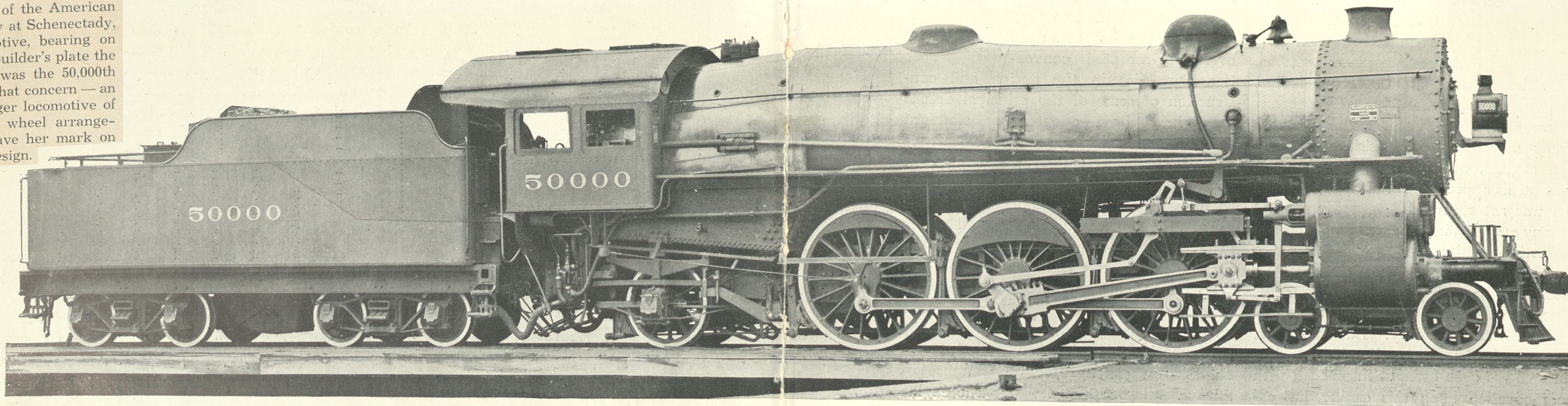
Works	Location	Years of Construction		Approx. No. Steam Locomotives Built (1)
Brooks	Dunkirk, N. Y.	1869	1931	4200
Cooke (2)	Paterson, N. J.	1882	1926	3000
Dickson	Scranton, Pa.	1862	1909	1400
Manchester (3)	Manchester, N. H.	1856	1913	1800
Montreal	Montreal, Can.	1904	active	4000
Pittsburgh	Pittsburgh, Pa.	1867	1919	2600
Rhode Island	Providence, R. I.	1866	1907	3400
Richmond	Richmond, Va.	1886	1927	1000
Rogers	Paterson, N. J.	1837	1913	6300
Schenectady	Schenectady, N. Y.	1851	1968	47300 (4)

(1) From THE STEAM LOCOMOTIVE IN AMERICA by A. W. Bruce
(2) Originally Danforth-Cooke, started in 1852
(3) Originally Amoskeag Mfg. Co., started in 1849
(4) Prior to the merger in 1901 6300 locomotives

c/n 68056 1931



IN July of 1911 there rolled out of the erecting shop of the American Locomotive Company at Schenectady, N. Y., a new locomotive, bearing on her tender, cab and builder's plate the number 50000. She was the 50,000th locomotive built by that concern — an experimental passenger locomotive of the Pacific or 4-6-2 wheel arrangement, destined to leave her mark on future locomotive design.



AN EXPERIMENTAL "PACIFIC"

The total weight of engine and tender is 215½ (American) tons. The total

(4-6-2) TYPE OF LOCOMOTIVE.

heating surface 4,048 square feet, and of superheating surface 897 square feet.

c/n 50000

Traction effort.....	40,300 lb.
Weight in working order.....	269,000 lb.
Weight on drivers.....	172,500 lb.
Weight of engine and tender in working order.....	430,500 lb.
Wheel base, driving.....	35 ft. 7 in.
Wheel base, total.....	68 ft. 2½ in.
Wheel base, engine and tender.....	68 ft. 2½ in.
Driving, diameter over tires.....	79 in.
Heating surface, firebox.....	248 sq. ft.
Heating surface, total.....	4,048 sq. ft.
Superheater heating surface.....	897 sq. ft.
Grate area.....	59.75 sq. ft.

Tender tank.....	Water Bottom
Frame.....	13 in. channels
Wheels, diameter.....	36 in.
Journals, diameter and length.....	5½ in. x 10 in.
Water capacity.....	8,000 gals.
Coal capacity.....	14 tons

After final tests on the Erie she was purchased by that company on September 11, 1912, and became its 2509, class K-3, assigned to trains No. 5 and 6 on the New York Division between Jersey City and Port Jervis. Here her performance was so outstanding that her run was extended to include the Delaware Division from Port Jervis to Susquehanna.

Harry V. Ladue, who then was engineer on No. 6 out of Port Jervis to Jersey City, told of a day when No. 6's engine, a heavy 2900, arrived at Port Jervis from the west with a hot trailer truck. The road foreman of engines was on the job and informed Harry that there would probably be considerable delay because there was no suitable engine available for relief. Harry had seen the 2509 on the ready track and suggested she be used. The 2509 was then well past her prime, and the road foreman was dubious. He consented with the understanding that, figuratively speaking, Harry's blood would be on his own shirt.

The 2509 not only made the time but picked up 10 minutes in the 89 miles between Port Jervis and Jersey City. It is my considered opinion that no man, living or dead, ever knew how fast the 2509 was for the simple reason that no man ever held her wide open on level track long enough to find out. Her reputation for availability and her capacity to pick up lost time was a foregone conclusion. She was the answer to a train dispatcher's prayer. You could always reach up and ask for a little more and get it.

The Erie discovered that Alco's beautiful demonstrator was "the answer to a train dispatcher's prayer"

AMERICAN RAILROADS AT WAR

BEFORE we can win this war, we must win the battle of transportation — The Key to Victory. American railroads are doing just that and much more. They are delivering a miraculous service as exemplified by the following achievements.

- Twice as much freight traffic and two and one-third as much passenger traffic in 1942 compared with 1929.
- Today's job done with one-quarter less cars, one-third less locomotives and one-third less men than in World War I.
- 638 billion ton-miles freight and 541 billion passenger miles exceeds 1929 transportation service by 43 per cent.
- More than 160 trains start every seven minutes from points scattered all over the United States.
- Ten thousand cars per day in and out of Army and Navy camps, posts and stations.
- Forty million gallons of oil per day in tank cars to the East Coast — about 85 times pre-war deliveries.
- Three thousand carloads of export freight per day. Four thousand carloads of military construction projects.

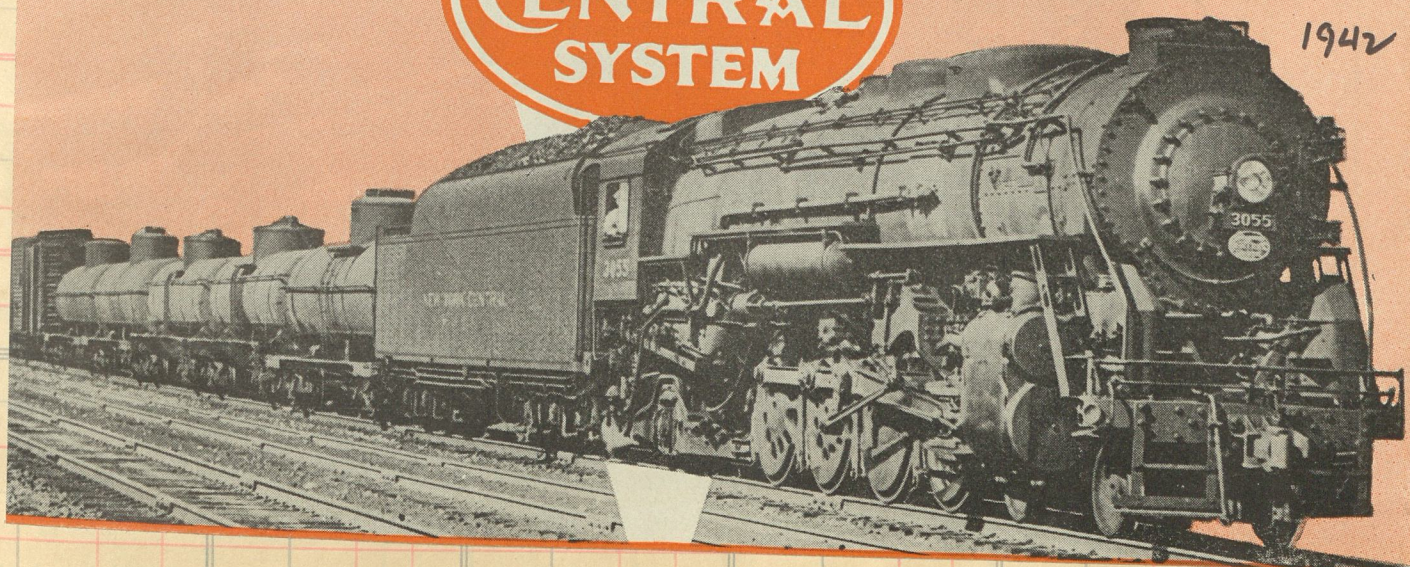
New York Central is operating a great and powerful fleet of freight locomotives on the transportation front delivering to Uncle Sam and the nation that fast dependable 20th Century Freight Service for which the Central is famous.

AMERICAN LOCOMOTIVE

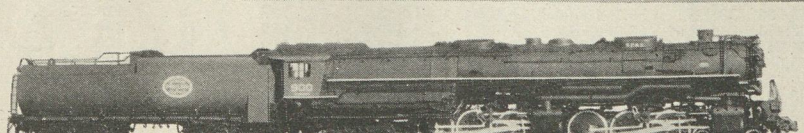
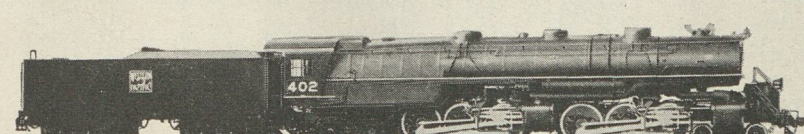
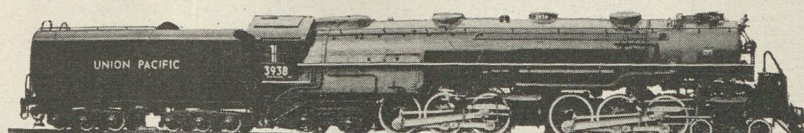
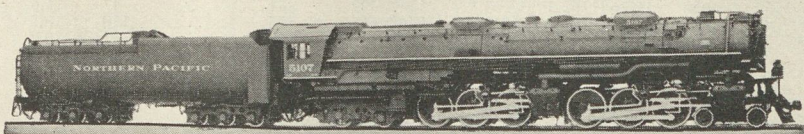
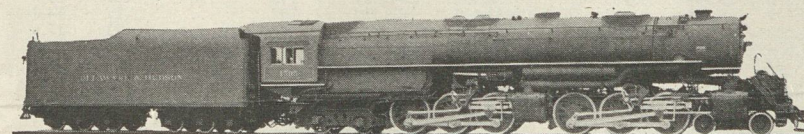
Manufacturers of Mobile Power
Steam, Diesel and Electric Locomotives, Marine Diesels,
Tanks, Gun Carriages and other Ordnance

**NEW YORK
CENTRAL
SYSTEM**

1942



Popular
Locomotive
Design for
HIGH-SPEED
FREIGHT SERVICE

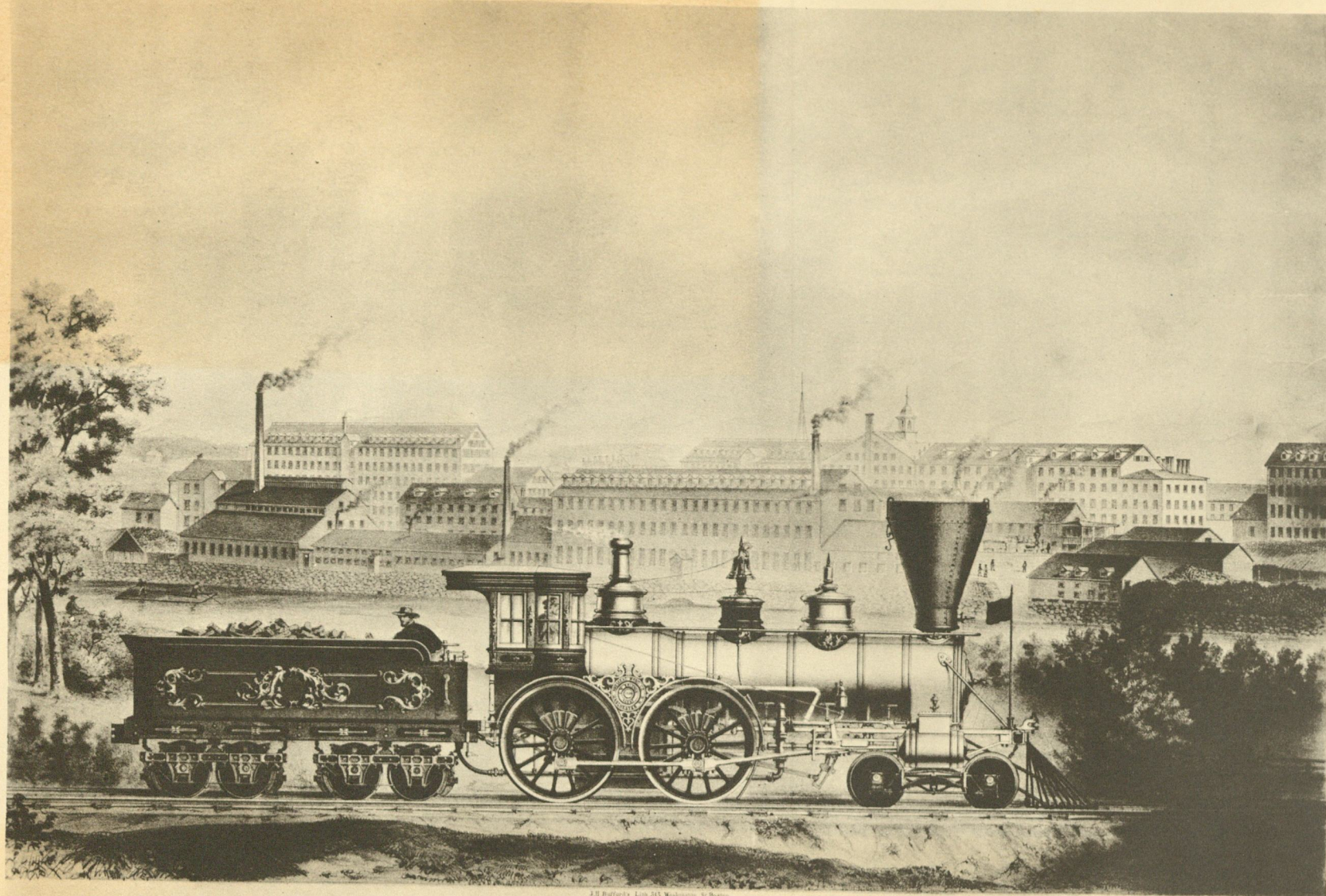


SINCE its introduction by the American Locomotive Company, the 4-6-6-4 articulated type locomotive has won widespread approval for its ability to handle heavier freight trains at higher speeds and with reduced maintenance. Alco to date has delivered 100 of these locomotives and has 43 more on order.

Union Pacific.....	15—1936
Northern Pacific.....	12—1936
Northern Pacific.....	9—1937
Spokane, Portland and Seattle.....	6—1937
Union Pacific.....	25—1937
Western Pacific.....	7—1938
Delaware and Hudson.....	20—1940
Northern Pacific.....	6—1941

Union Pacific.....	20—on order
Delaware and Hudson.....	15—on order
Clinchfield.....	8—on order

AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET
NEW YORK, N. Y.



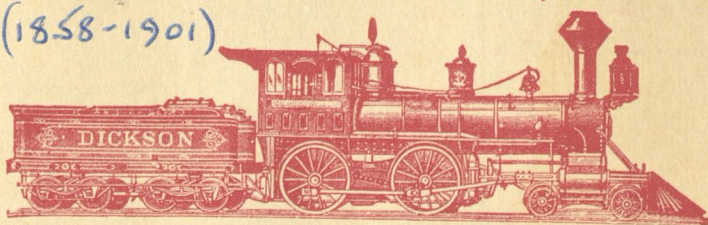
OUTSIDE CONNECTED PASSENGER ENGINE.
AMOSKEAG MANUFACTURING CO.
 MANCHESTER N. H.

C.W. Baldwin Agt

1858



DICKSON MANUFACTURING COMPANY,
 Scranton and Wilkesbarre, Pa.
 (1858-1901)



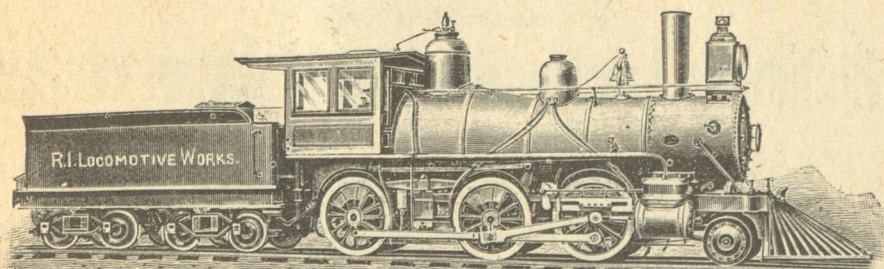
Manufacturers of Locomotives for every kind of service. The different classes constructed according to standard gauges and templets so that like parts are interchangeable and may be ordered by number. Mining, Hoisting and Pumping Machinery a specialty. Car Wheels Forgings and Machinery of all kinds. Specifications and plans furnished on application.

GENERAL OFFICE, Scranton, Pa.

H. M. BOIES, President.

WM. H. PERKINS, Sec'y and Treas.

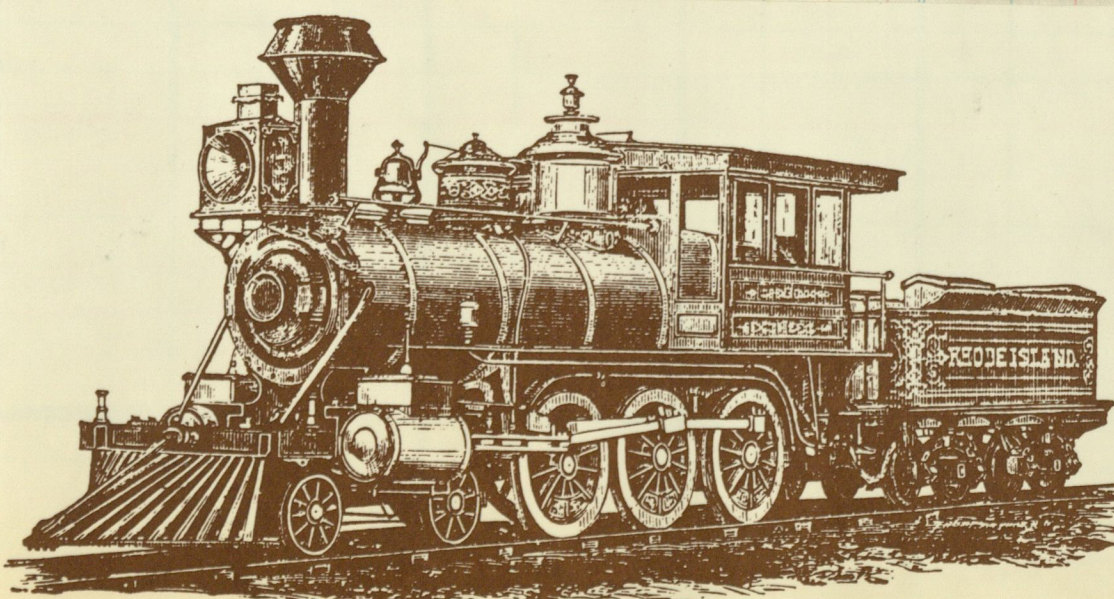
1900 NEW YORK OFFICE: 58 PINE ST.



RHODE ISLAND LOCOMOTIVE WORKS,
 PROVIDENCE, R. I.

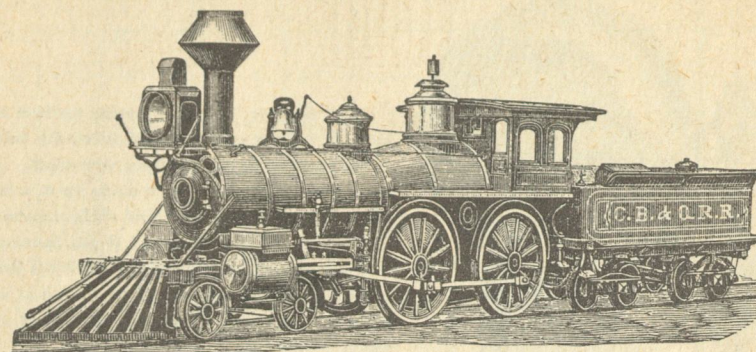
CHARLES FELIX MASON, PRESIDENT. EARL PHILIP MASON, VICE-PRESIDENT.
 WILLIAM P. CHAPIN, TREASURER. ARTHUR LIVINGSTON MASON, SECRETARY.
 JOSEPH LYTHGOE, AGENT AND SUPERINTENDENT.
 SIDNEY A. STEPHENS, TRAVELING AGENT. J. V. MOTTER, SOUTHERN AGENT.

MANUFACTURERS OF ALL CLASSES OF
LOCOMOTIVE ENGINES,
 For Broad, Standard, and Narrow Gauge Roads,
 From OUR OWN DESIGNS, and from Specifications Furnished.



1870

Manchester Locomotive Works.



Manufacturers of all descriptions of **LOCOMOTIVES** and the "**AMOSKEAG STEAM FIRE ENGINES.**" They also furnish **BOILERS, TANKS, IRON** and **BRASS CASTINGS**, and any and all parts of their **LOCOMOTIVES** and **STEAM FIRE ENGINES** in duplicate, upon receipt of order.

All orders for work should be addressed to

WM. G. MEANS, Treas.,
 40 Water St., Boston, Mass.

A. BLOOD, Sup't,
 Manchester, N. H.

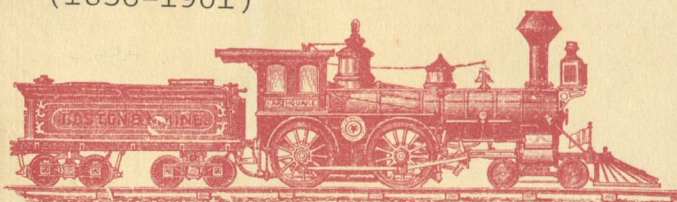


ARETAS BLOOD, SUPT
 MANCHESTER, N. H.

MANCHESTER, N.H.

WM. G. MEANS, TREAS.,
 40 WATER ST., BOSTON.

(1856-1901)

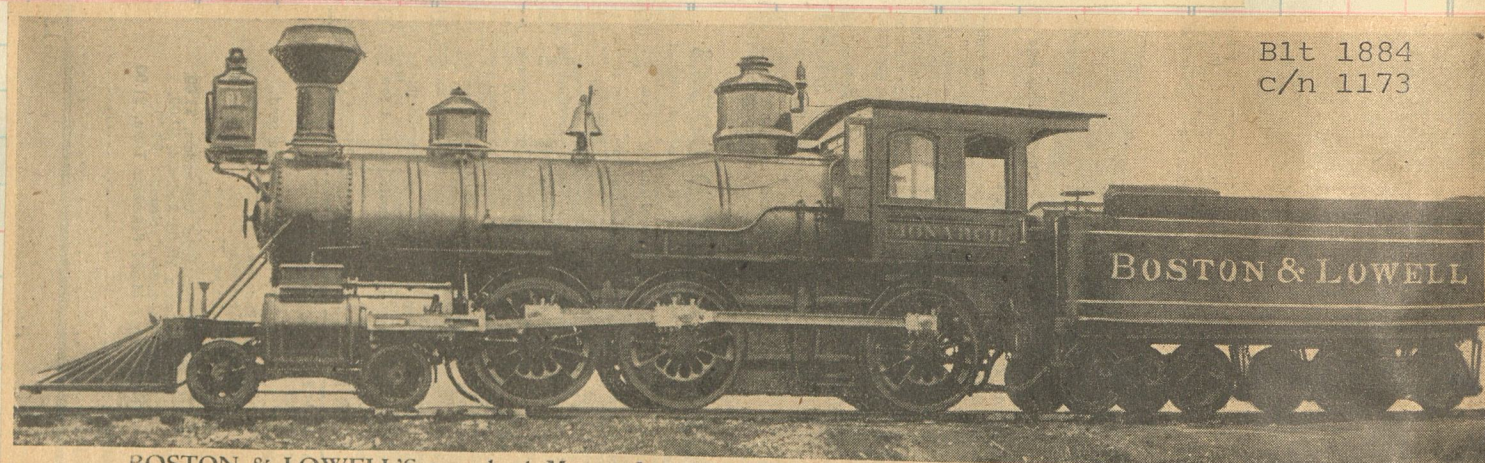
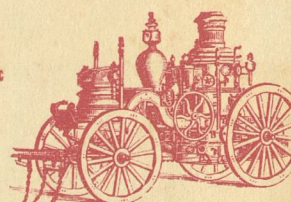


MANCHESTER LOCOMOTIVE WORKS,
 MANUFACTURERS OF LOCOMOTIVES AND THE
AMOSKEAG STEAM FIRE-ENGINE.

JOHN A. BURNHAM, President.

WM. G. MEANS, Treas., Boston, Mass.

ARETAS BLOOD, Agent, Manchester, N. H.

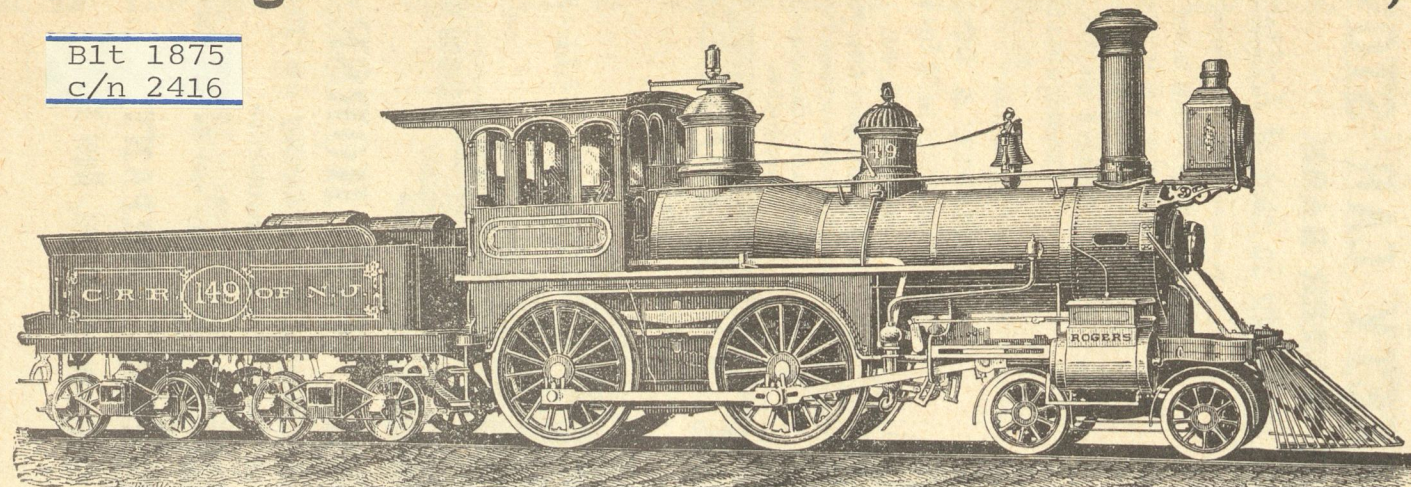


Blt 1884
 c/n 1173

BOSTON & LOWELL'S ten-wheel *Monarch* was built by Manchester Locomotive Works in New Hampshire

The Rogers Locomotive and Machine Works,

Blt 1875
c/n 2416

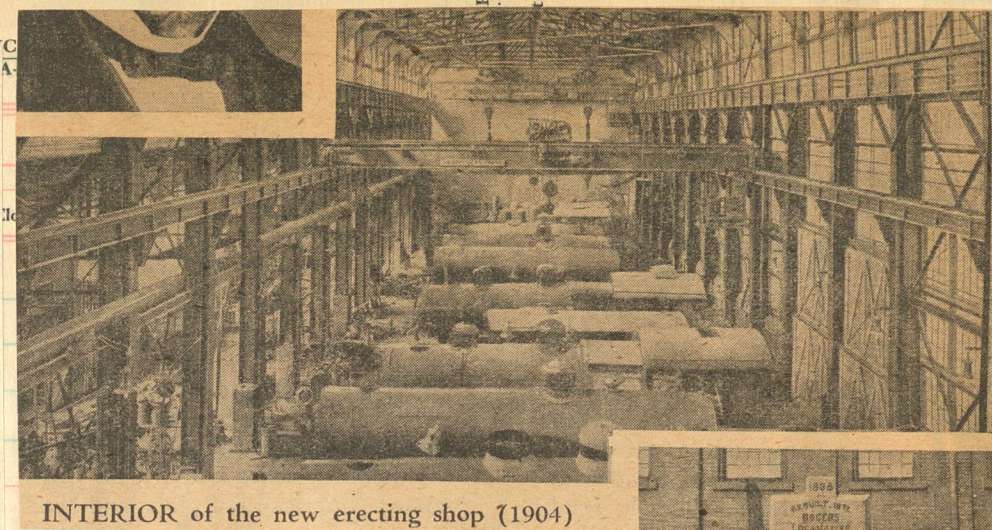


Of PATERSON, N. J. New York Office, 44 EXCHANGE PLACE.
MANUFACTURERS OF
LOCOMOTIVE ENGINES AND TENDERS,
AND OTHER RAILROAD MACHINERY.

J. S. ROGERS, Pres't,
R. S. HUGHES, Sec'y,
WM. S. HUDSON, Sup't, } PATERSON, N. J.

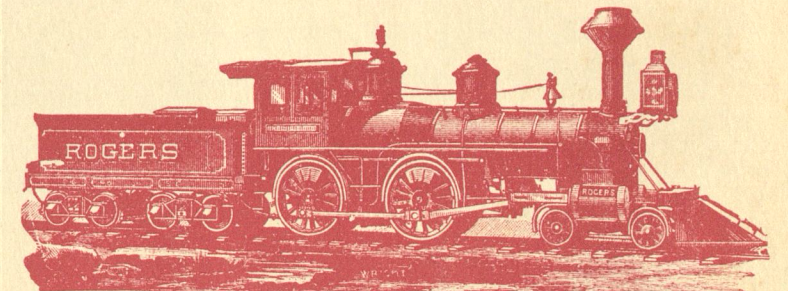
ROBT. S. HUGHES, Treas.,
44 Exchange Place, New York.

(1856-1901)



INTERIOR of the new erecting shop (1904)

ROGERS LOCOMOTIVE & MACHINE WORKS,
PATERSON, N. J.; NEW YORK OFFICE, 44 EXCHANGE PLACE



MANUFACTURERS OF
Locomotive Engines and Tenders and other Railroad Machinery.
J. S. ROGERS, President. } PATERSON, N. J.
R. S. HUGHES Secretary. } 44 Exchange Place, New York.

Eight-Wheel Standard Locomotives

From a catalog of the Rogers Locomotive Works, 1886

Blt 1880
c/n 2629

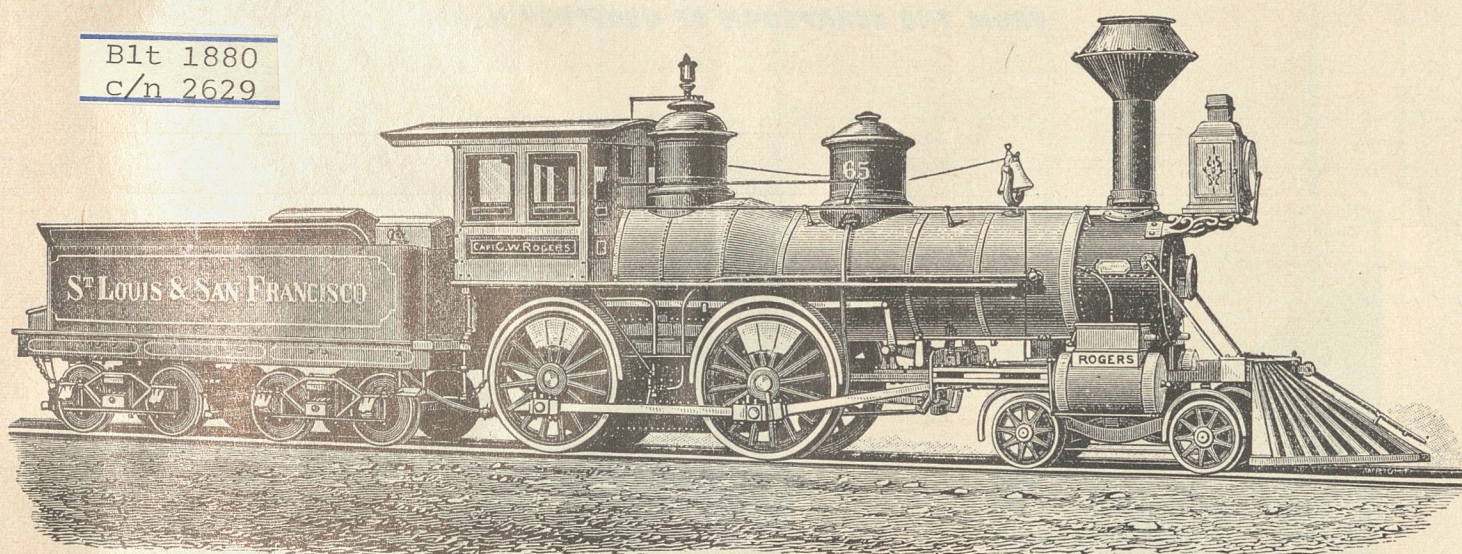


PLATE 1. Eight-wheel standard locomotive for passengers.

Cylinders Diameter and Stroke inches	Diameter of Driving Wheels inches	Wheel Base of Driving Wheels	Total	Weight, in running order on Truck lbs.	Total lbs.	Separate Tender Capacity of Tank gals.
15 x 22	66	7'-9"	21'-4"	41,200	23,200	64,400
15 x 24	66	7'-9"	21'-8"	42,200	23,400	65,600
16 x 22	66	7'-9"	21'-7"	43,200	23,400	66,600
16 x 24	66	8'-0"	22'-0"	44,200	24,400	68,600
17 x 22	66	8'-0"	21'-9½"	45,200	24,400	69,600

Gauge: 4'-8½" or wider. Fuel, bituminous coal.

Blt 1884
c/n 3459

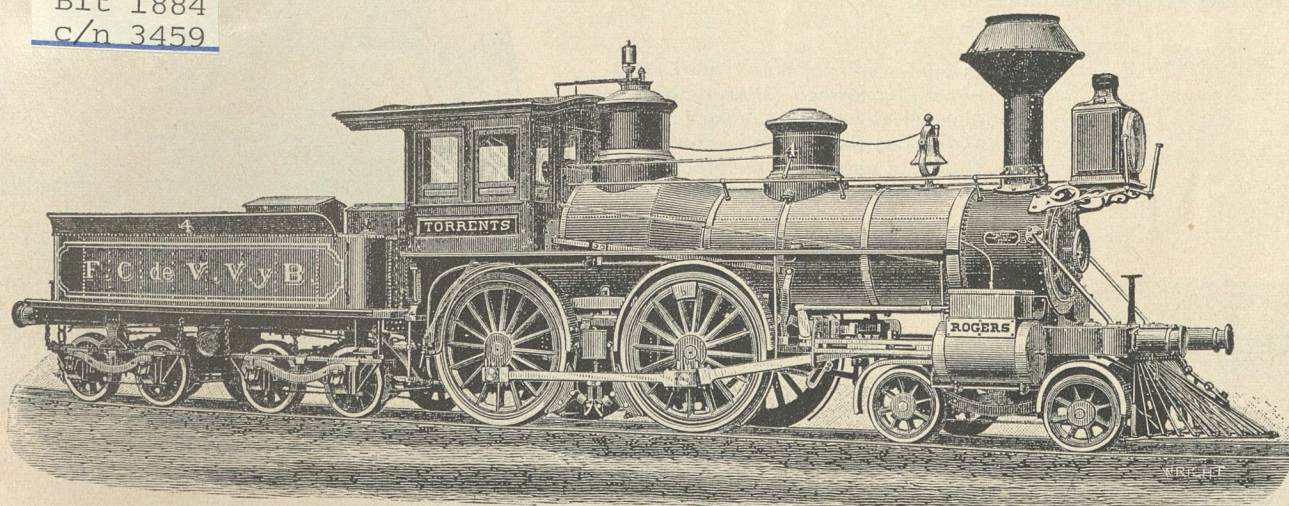


PLATE 2. Eight-wheel standard locomotive for passengers.

Cylinders Diameter and Stroke inches	Diameter of Driving Wheels inches	Wheel Base of Driving Wheels	Total	Weight, in running order on Truck lbs.	Total lbs.	Separate Tender Capacity of Tank gals.
17 x 24	66	8'-6"	22'-8½"	48,700	27,000	75,700
18 x 24	66	8'-6"	22'-6½"	49,200	27,200	76,400
18 x 22	66	8'-6"	22'-11½"	52,400	27,600	80,000
19 x 22	66	8'-6"	22'-7½"	53,000	28,000	81,000

Gauge: 4'-8½" or wider. Fuel, bituminous coal.

Blt 1884
c/n 3495

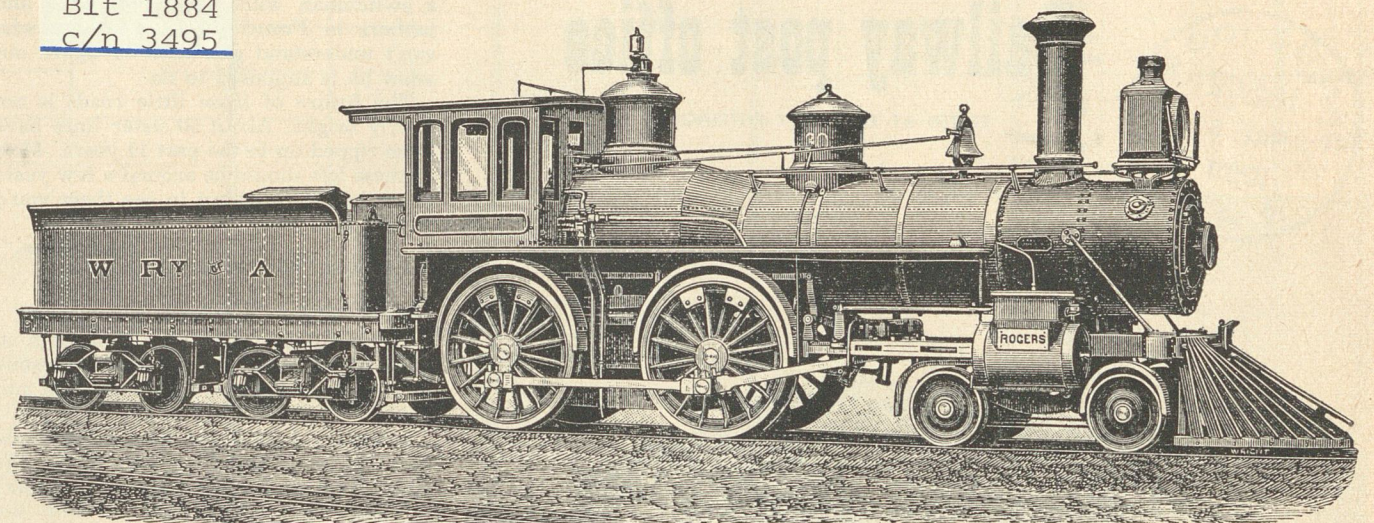


PLATE 3. Eight-wheel standard locomotive for passenger or freight.

Cylinders Diameter and Stroke inches	Diameter of Driving Wheels inches	Wheel Base of Driving Wheels	Total	Weight, in running order on Truck lbs.	Total lbs.	Separate Tender Capacity of Tank gals.
15 x 24	56	7'-9"	21'-7"	41,000	23,000	64,000
16 x 22	56	7'-9"	21'-6"	42,000	23,000	65,000
16 x 24	56	8'-0"	21'-11"	43,000	24,000	67,000
17 x 22	56	8'-0"	21'-9½"	44,000	24,000	68,000
17 x 24	56	8'-3"	22'-4½"	47,500	26,500	74,000
15 x 22	62	7'-9"	21'-3"	40,700	23,000	63,700
15 x 24	62	7'-9"	21'-7"	41,700	23,200	64,900
16 x 22	62	7'-9"	21'-6"	42,700	23,200	65,900
16 x 24	62	8'-0"	21'-11"	43,700	24,200	67,900
17 x 22	62	8'-0"	21'-9½"	44,700	24,200	68,900
17 x 24	62	8'-3"	22'-4½"	48,200	26,800	75,000
18 x 22	62	8'-3"	22'-3½"	48,500	27,000	75,500

Gauge: 4'-8½" or wider. Fuel, bituminous coal.

Blt 1883
c/n 3308

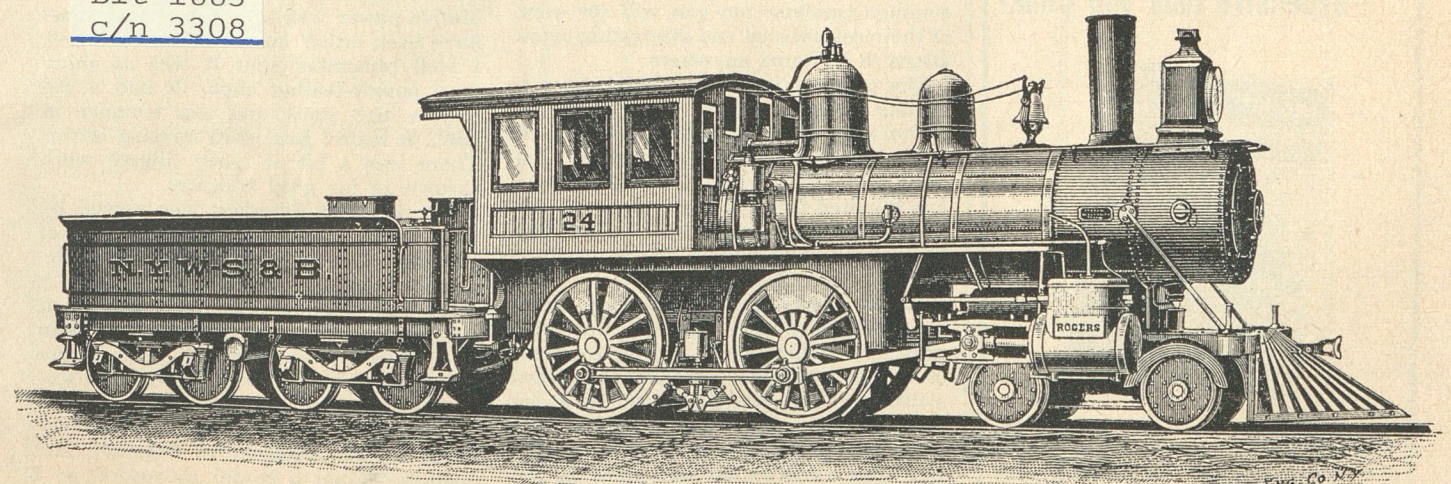
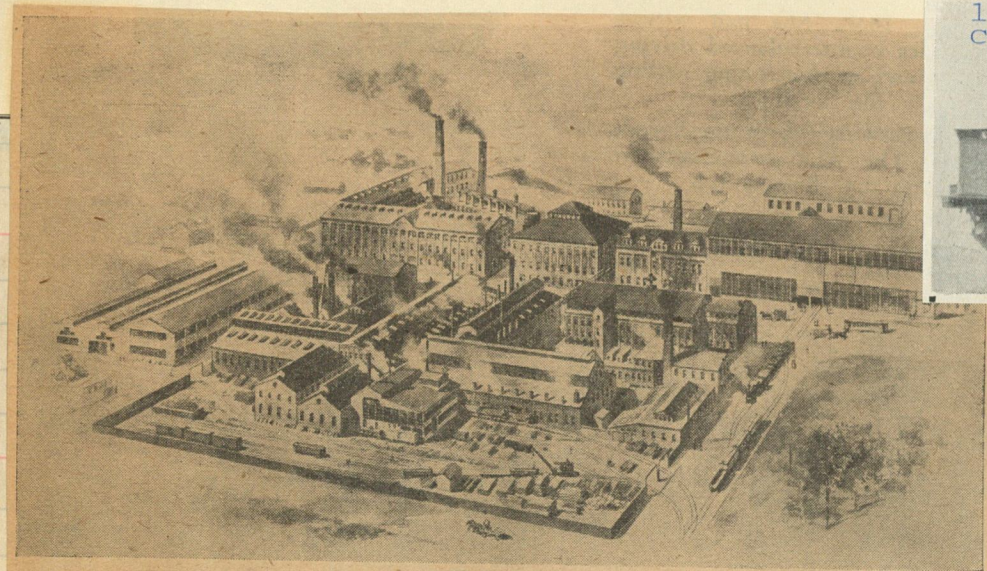
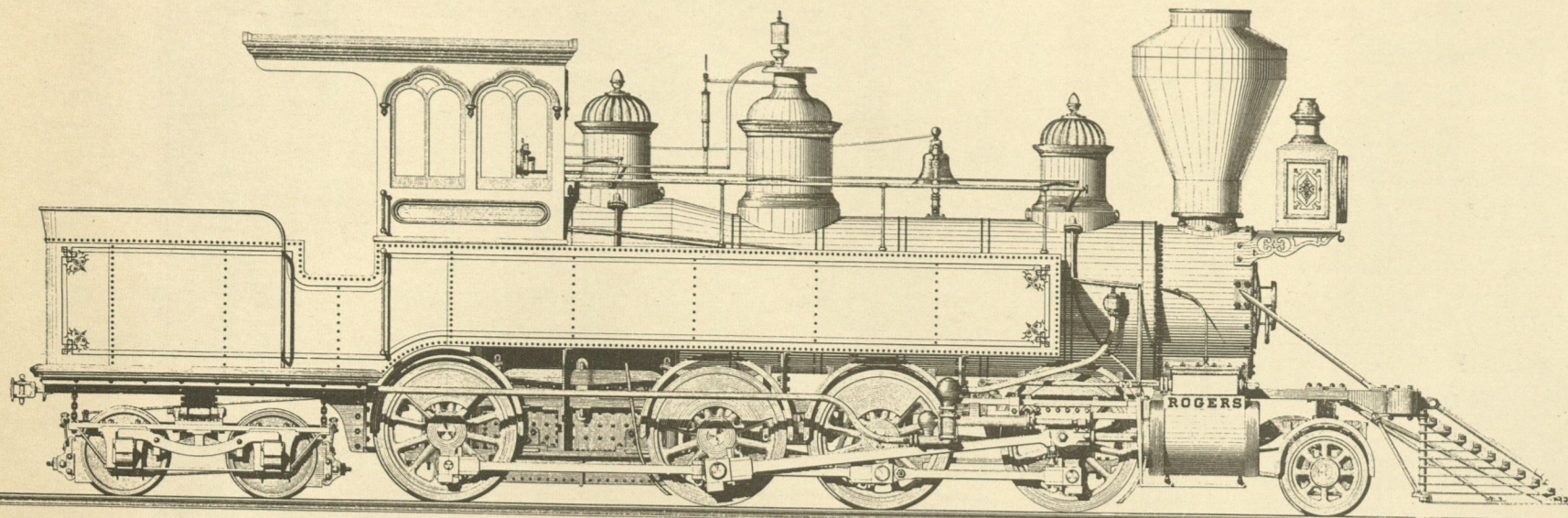


PLATE 4. Eight-wheel standard locomotive for passengers.

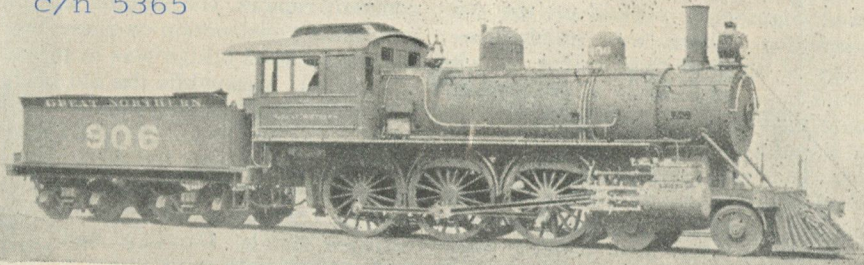
Cylinders Diameter and Stroke inches	Diameter of Driving Wheels inches	Wheel Base of Driving Wheels	Total	Weight, in running order on Truck lbs.	Total lbs.	Separate Tender Capacity of Tank gals.
17 x 22	66	8'-0"	21'-11"	59,500	23,500	83,000
17 x 24	66	8'-0"	22'-1½"	63,000	25,000	88,000
18 x 22	66	8'-0"	21'-11"	63,000	25,000	88,000
18 x 24	66	8'-6"	22'-9½"	64,000	32,500	96,500

Gauge: 4'-8½" or wider. Fuel, anthracite coal.

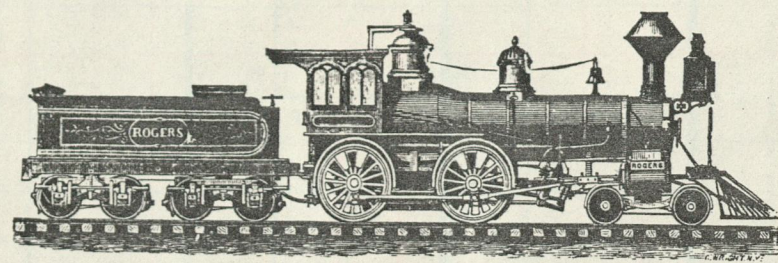


ROGERS LOCOMOTIVE WORKS, as it looked in its heyday. Original plant, built in 1835, stood at the corner of Market and Spruce Streets (right rear corner of block in foreground). Cupola-topped wing was added in '71. New erecting shop of 1901 stood at the end of Market Street

1899
c/n 5365



ROGERS Locomotive & Machine WORKS, PATERSON, NEW JERSEY,



Having extensive facilities, are now prepared to furnish promptly, of the best and most approved description, either COAL or WOOD BURNING

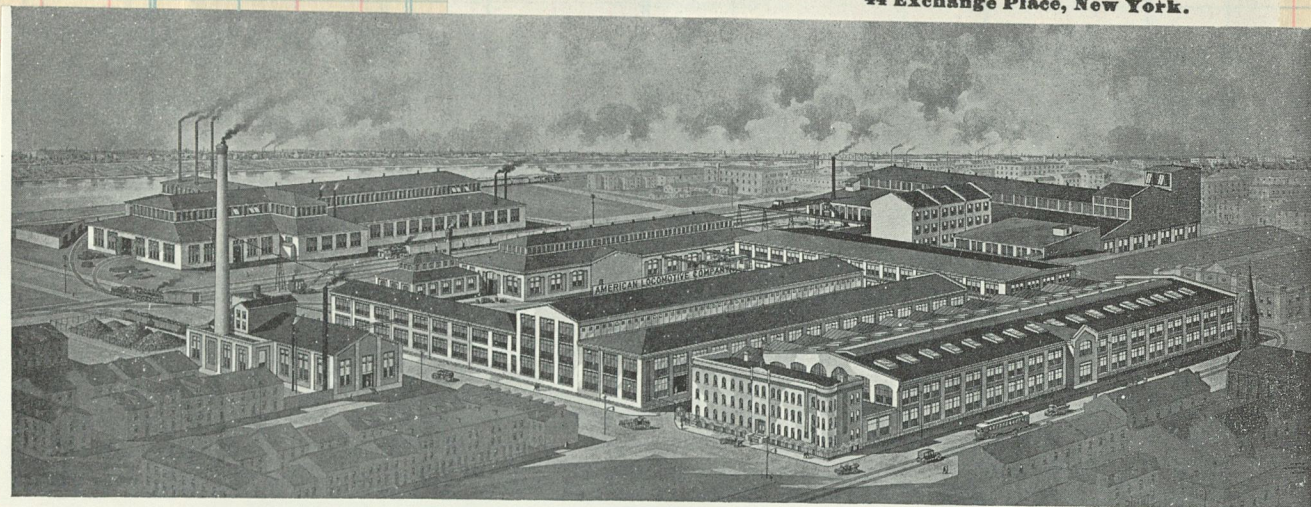
Locomotive Engines, OF ALL GAUGES.

AND OTHER VARIETIES OF

Railroad Machinery.

J. S. ROGERS, President.
R. S. HUGHES, Secretary. } PATERSON, N. J.
WM. S. HUDSON, Supt.

THOS. ROGERS, Treas.,
44 Exchange Place, New York.



PITTSBURGH WORKS, PITTSBURGH, PA.

The Cooke Locomotive and Machine Company, PATERSON, N. J.

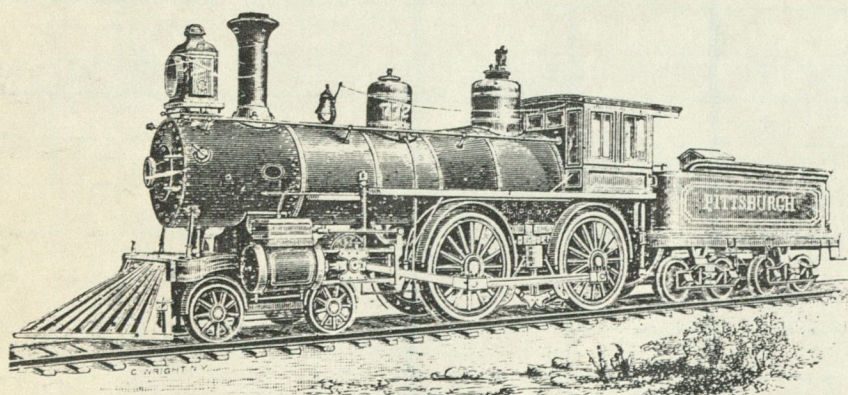
JOHN S. COOKE,
Pres. & Gen'l Mgr.

WM. BERDAN,
Secretary and Treasurer.

FRED. W. COOKE,
Vice-President.

New York Office, - - 45 Broadway.

H. A. ALLEN, - Agent.



PITTSBURGH LOCOMOTIVE AND CAR WORKS, PITTSBURGH, PA.

Office at Works, 396 Beaver Ave., Allegheny City, Pa.
POST OFFICE ADDRESS, PITTSBURGH, PA.

MANUFACTURERS OF

LOCOMOTIVE ENGINES

For Broad or Narrow-Gauge Roads, from Standard Designs, or according to Specifications, to Suit Purchasers.

TANKS, LOCOMOTIVE, STATIONARY, OR PORTABLE BOILERS
FURNISHED AT SHORT NOTICE.

Stationary Engines and Machinery of all descriptions built to Specifications.

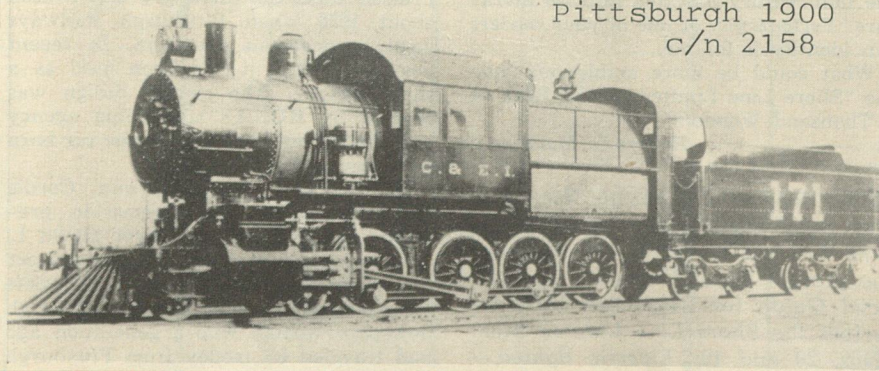
WILSON MILLER, President and Treasurer.

D. A. WIGHTMAN, Superintendent.

BRANCH OFFICE:

115 BROADWAY, NEW YORK.

Pittsburgh 1900
c/n 2158

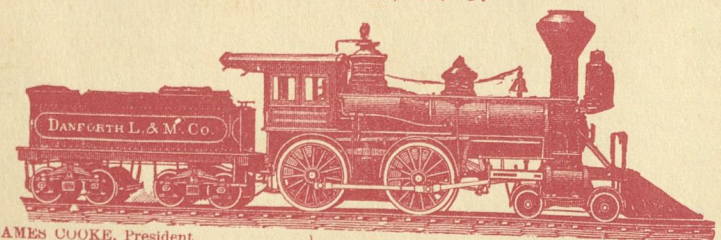


PITTSBURGH LOCOMOTIVE & CAR WORKS, PITTSBURGH, PA.



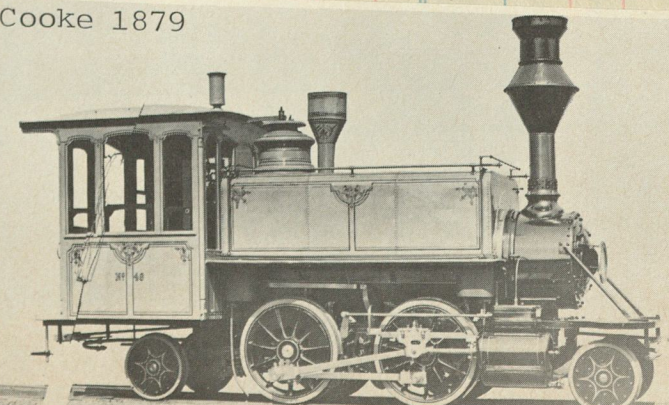
MANUFACTURERS OF
LOCOMOTIVE ENGINES FOR BROAD OR NARROW GAUGE ROADS
From standard designs, or according to specifications, to suit purchasers.
Tanks, Locomotive or Stationary Boilers Furnished at Short Notice.
D. A. STEWART, Pres't, D. A. WIGHTMAN, Sup't. WILSON MILLER, Sec. and Treas.

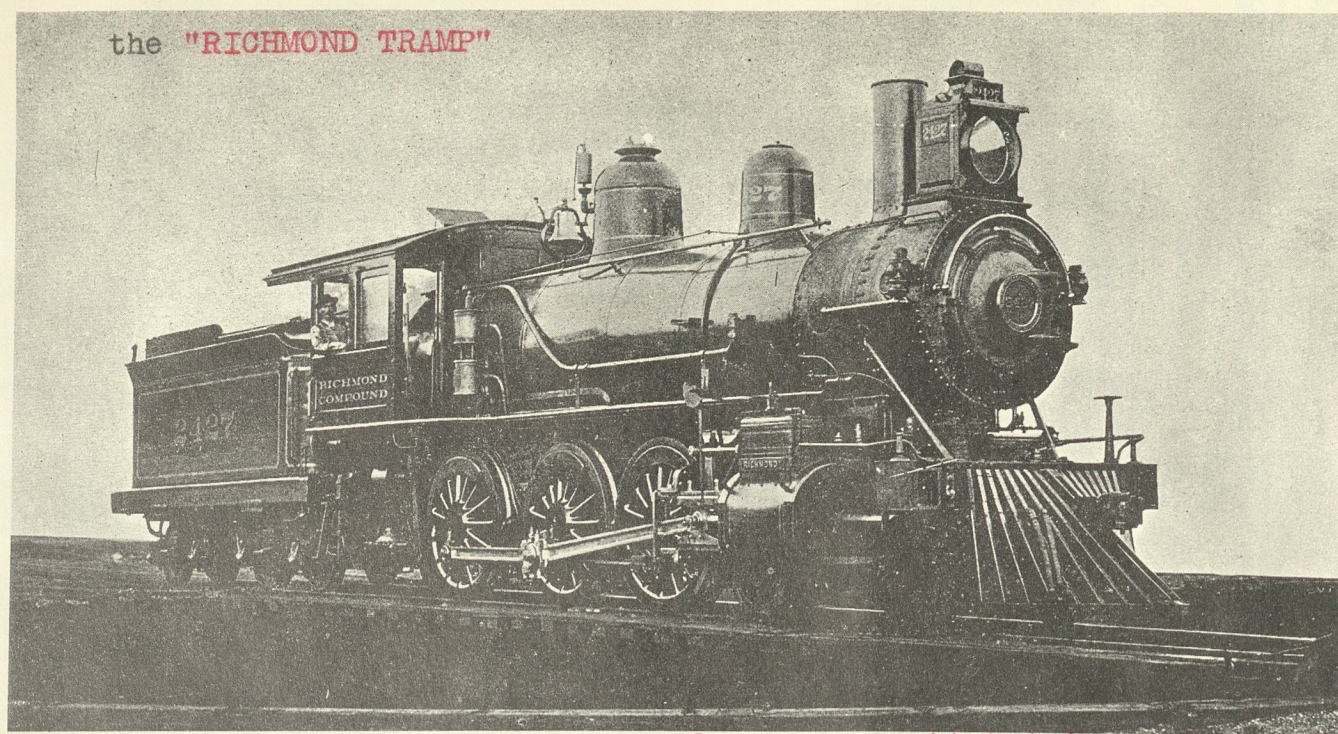
COOKE LOCOMOTIVE & MACHINE CO. (Formerly Danforth Locomotive & Machine Co.), PATERSON, N. J.



JAMES COOKE, President.
JOHN S. COOKE, Vice-Pres. & Gen. Man. } PATERSON, N. J.
WM. BERDAN, Sec'y & Treas. } New York Office, 115 Broadway.
H. A. ALLEN, Agent.

Cooke 1879

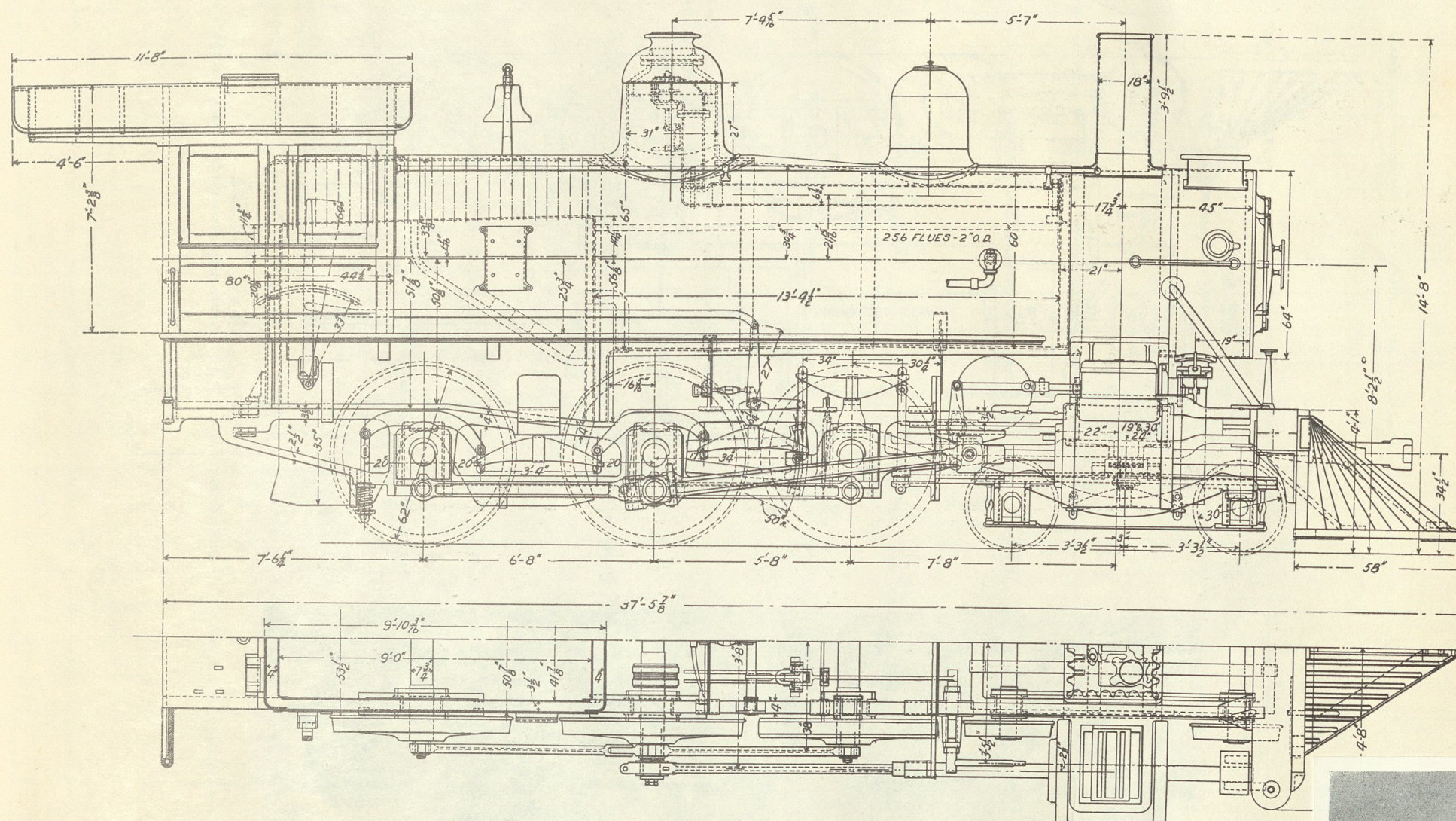




the "RICHMOND TRAMP"

later Prescott & Arizona So.

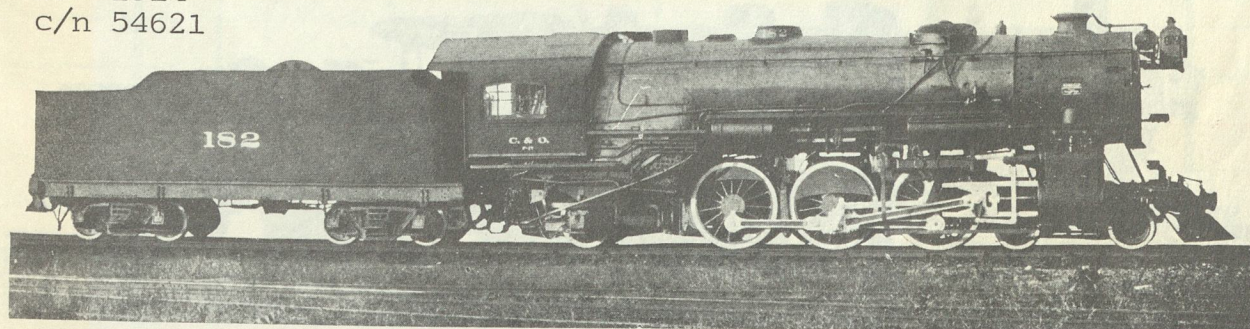
Richmond compound freight locomotive No. 2427, built by the Richmond Locomotive and Machine Works in 1894.



Richmond compound freight locomotive No. 2427. This was an experimental locomotive known as the Richmond Tramp because of its peripatetic use. Eventually it was sold to the Prescott & Arizona Southern (A. T. & S. F.)

182-187
Blt 1914
c/n 54621

CHESAPEAKE AND OHIO RAILWAY



PACIFIC TYPE PASSENGER LOCOMOTIVE

6 Locomotives like the above are being fired by Street Stokers

Cylinders	27 x 28 in.
Driving wheels, diameter	69 in.
Steam pressure	185 lbs.
Boiler diameter	83 11/16 in.
Tubes, length	20 ft.—6 in.
“ number	43—5 1/2 in.
“ “	244—2 1/4 in.
Heating surface, tubes	4,196 sq. ft.
“ fire box	255.4 sq. ft.
“ arch tubes	27.4 sq. ft.
“ total	4,478 sq. ft.
“ superheater	.991 sq. ft.
Fire box	120 1/2 x 96 1/4 in.

Grate area	80.4 sq. ft.
Wheel base, driving	13 ft.—0 in.
“ “ engine	34 ft.—9 in.
“ “ and tender	71 ft.—6 1/2 in.
Weight, leading	58,900 lbs.
“ driving	189,100 lbs.
“ trailing	64,600 lbs.
“ engine	312,600 lbs.
“ tender	185,000 lbs.
Tender capacity, water	9,500 gals.
“ coal	14 tons
Maximum tractive power	46,500 lbs.
Factor of adhesion	4.07

ION.

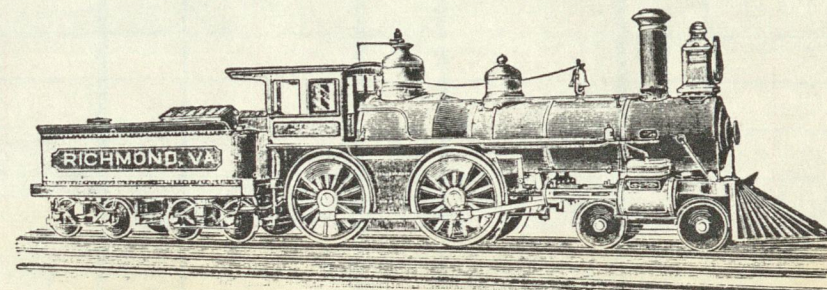
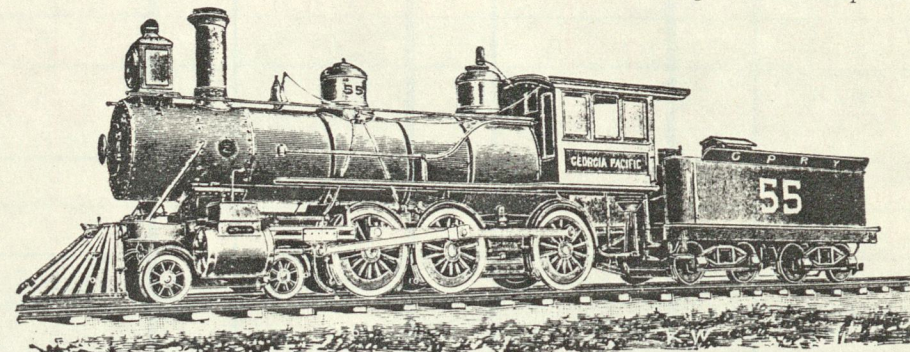
(1886-1901)

1890

Established 1865.

Richmond Locomotive and Machine Works, RICHMOND, VA., BUILDERS OF LOCOMOTIVES

For Every Variety of Service, Accurately Made to Gauges and Templates



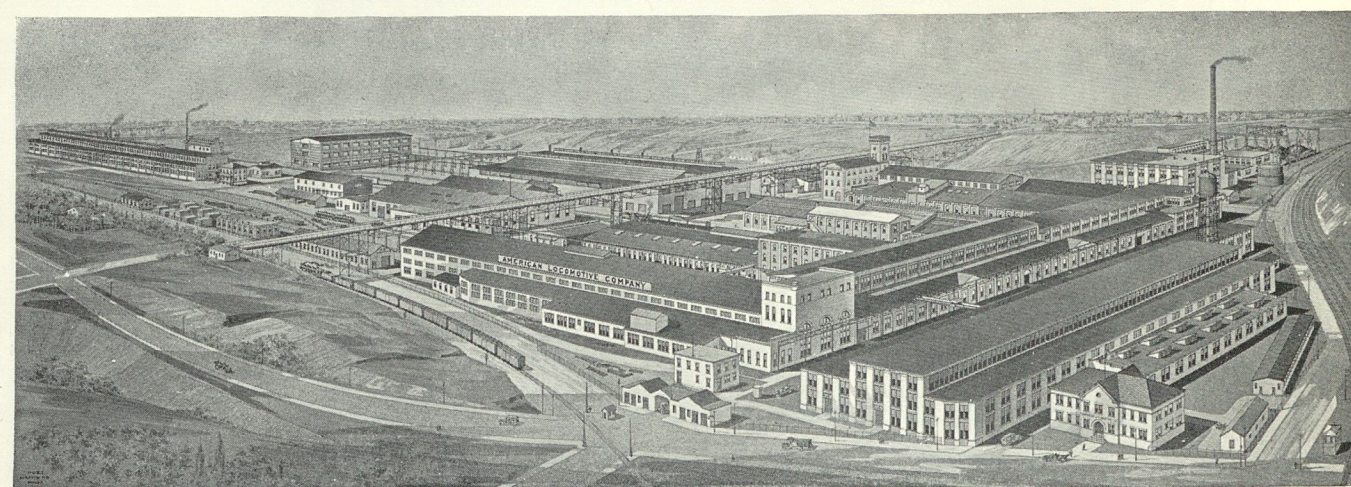
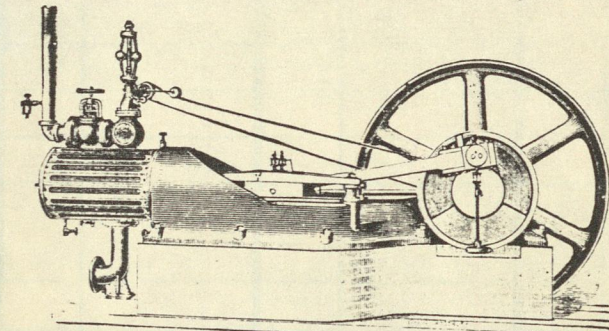
ALSO,

STATIONARY AND PORTABLE ENGINES,

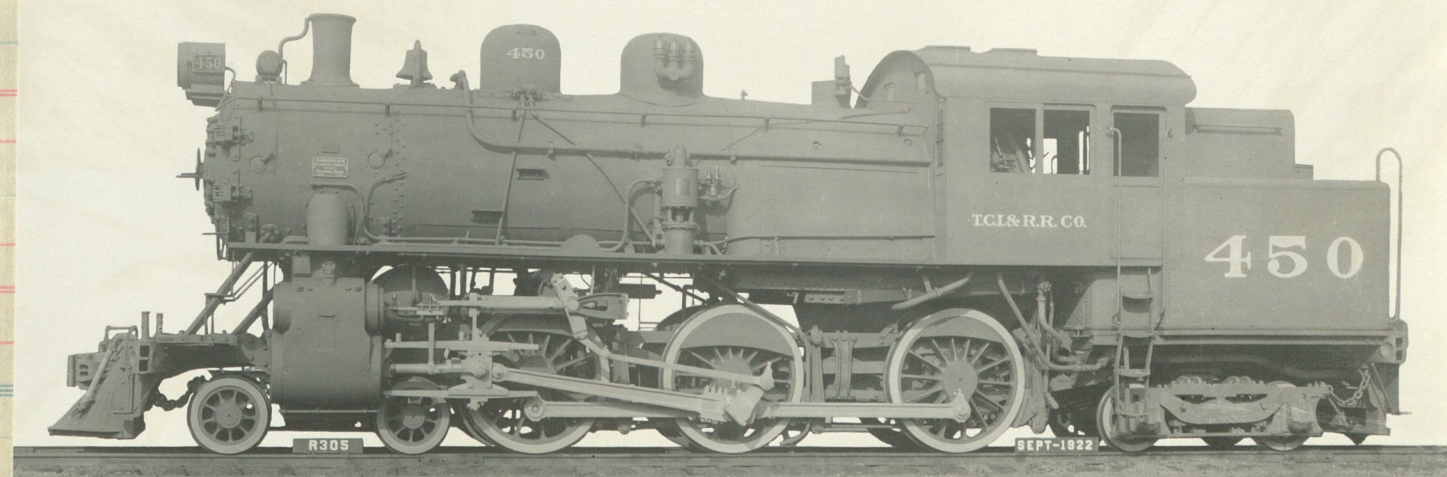
In all the most Modern and Economical Types.

BOILERS OF EVERY KIND,

Of Steel or Iron, either to standard dimensions or to suit the requirements of purchasers.



RICHMOND WORKS, RICHMOND, VA.

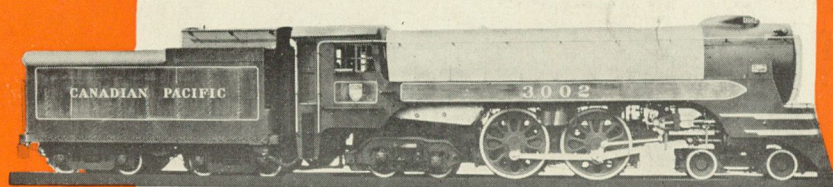


Tennessee Coal Iron & RR c/n 63357 Built 1922

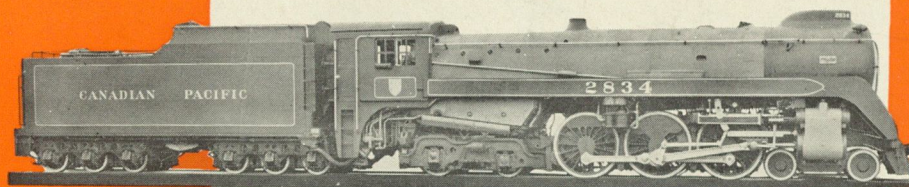
PASSENGER POWER IN CANADA



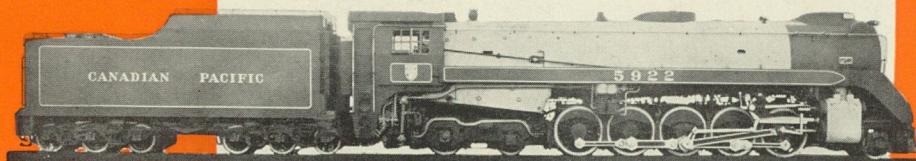
A high-speed locomotive
for comparatively light
service.



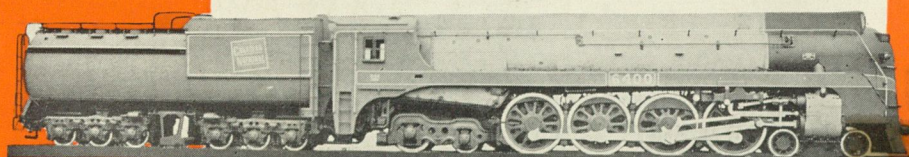
Canadian Pacific standard
high-speed passenger
locomotive.



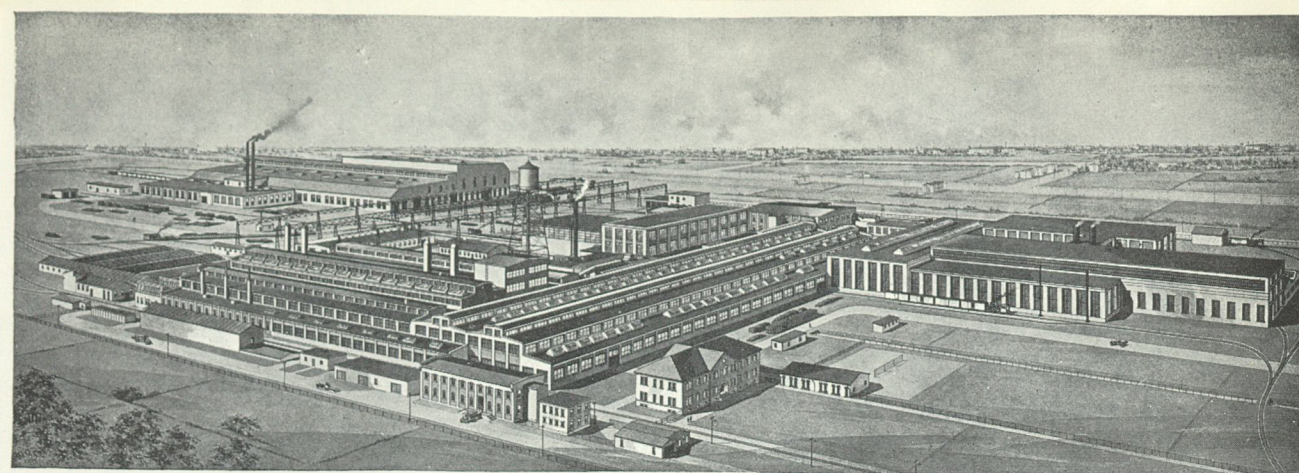
Used by Canadian Pacific
in passenger service over
the Western mountain
divisions.



Used by Canadian National
in high-speed passenger
service—one of the first stream-
lined steam locomotives.

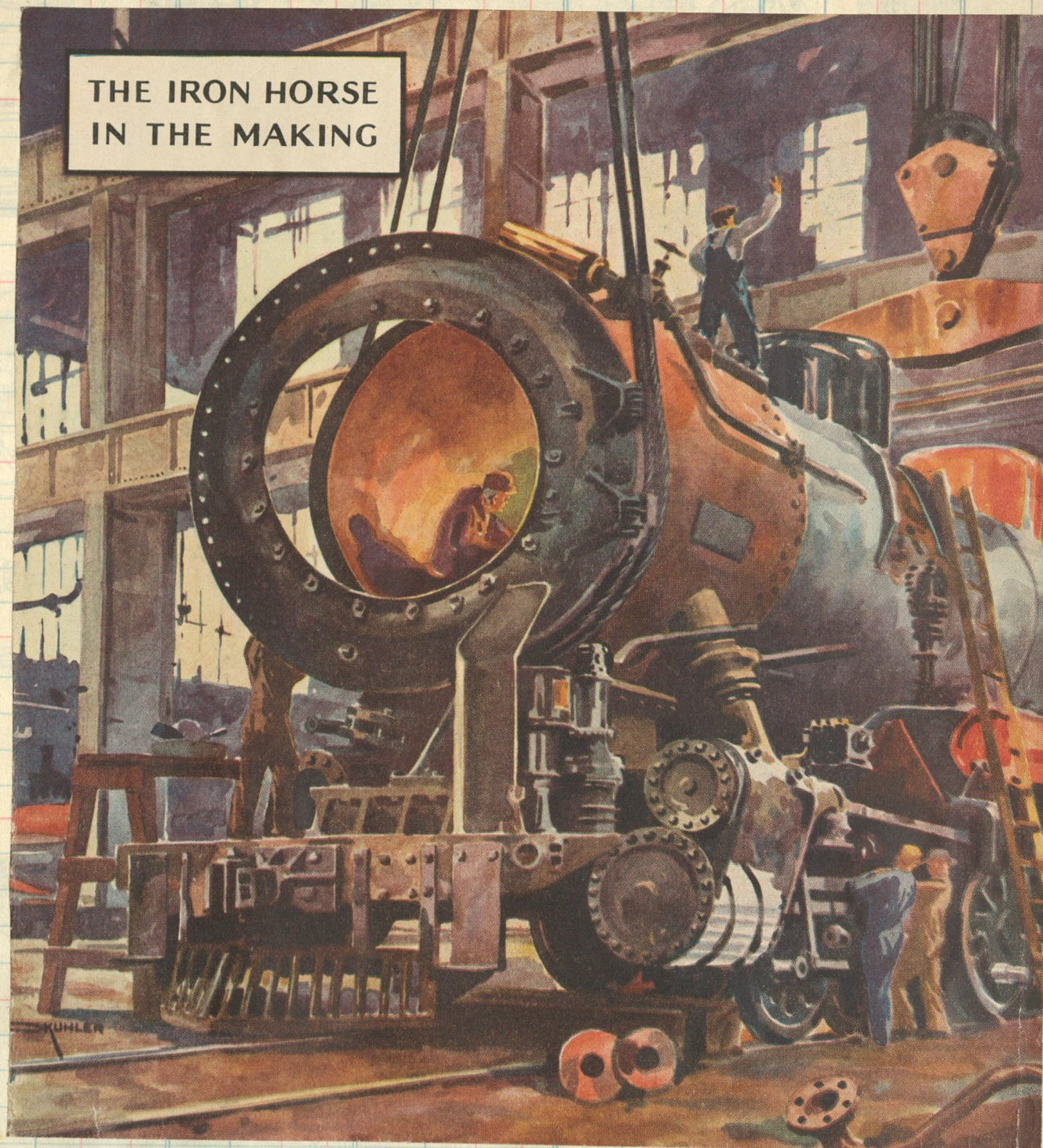


MONTREAL LOCOMOTIVE WORKS • LIMITED
MONTREAL • • • • • CANADA

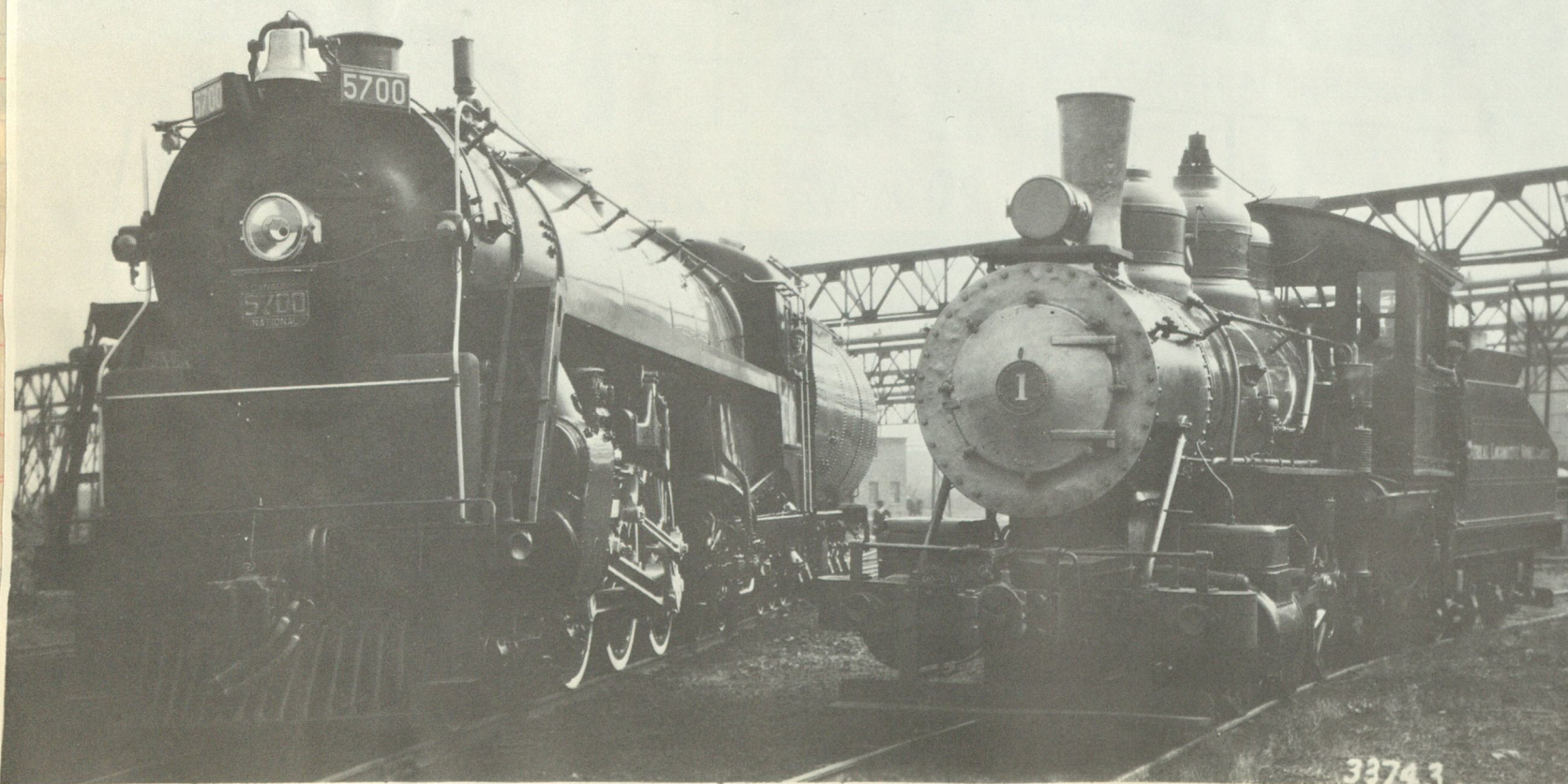


MONTREAL WORKS, MONTREAL, QUEBEC, CANADA

THE IRON HORSE IN THE MAKING

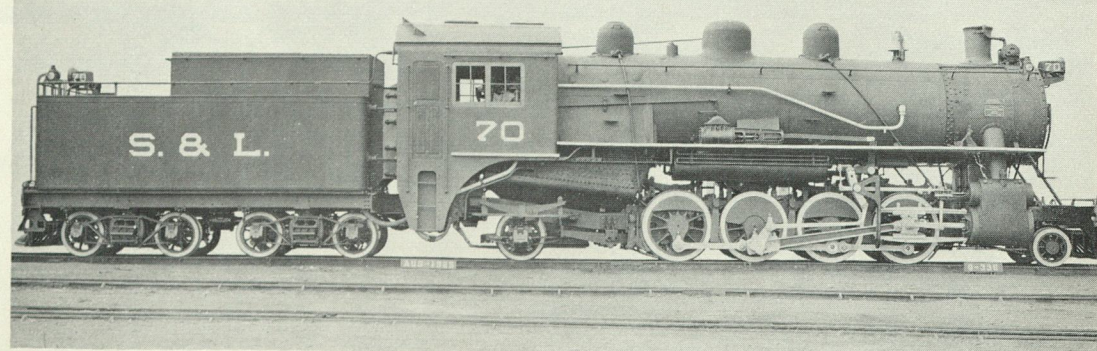


In the plant yard of the Montreal Works in 1930, a brand new C.N.R. 4-6-4
c/n 68394 poses with the plant switcher, M.L.W. #1 b1t in 1906 c/n 41214

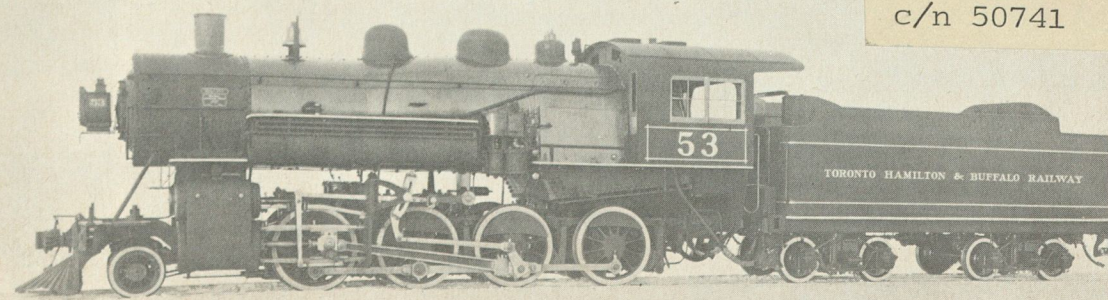


Montreal 1925

c/n 66319



Montreal 1912
c/n 50741

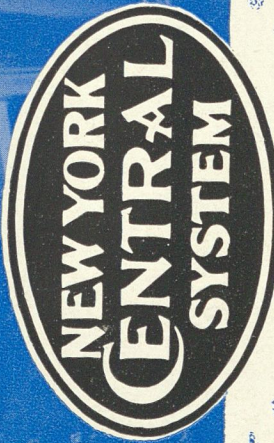


Q.101

50 New Mohawks Added to Central's Fleet of SUPER LOCOMOTIVES



3000-3034
Schenectady 1940
c/n's 69337-371

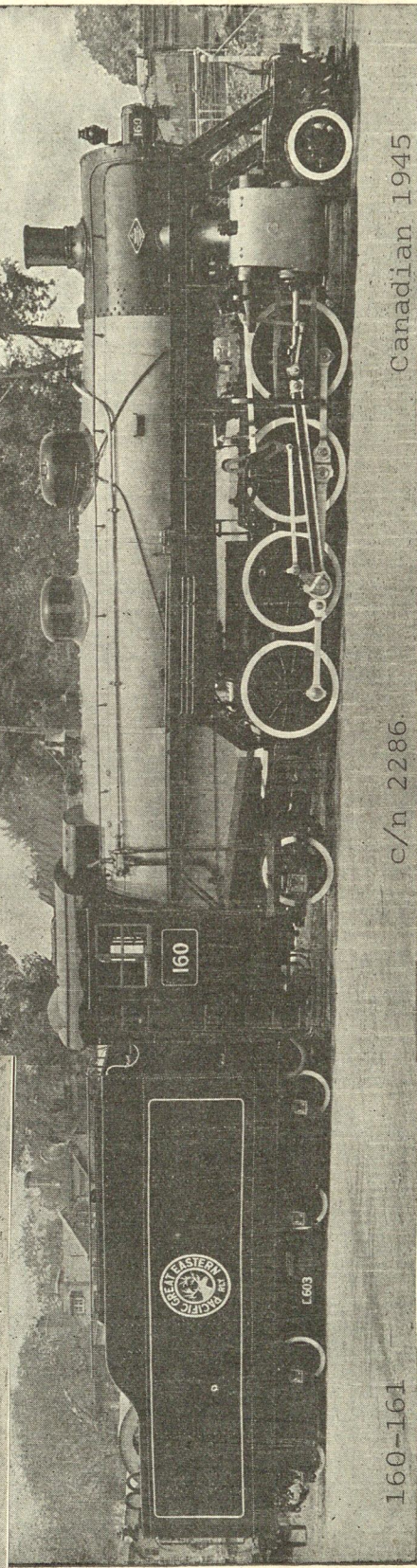
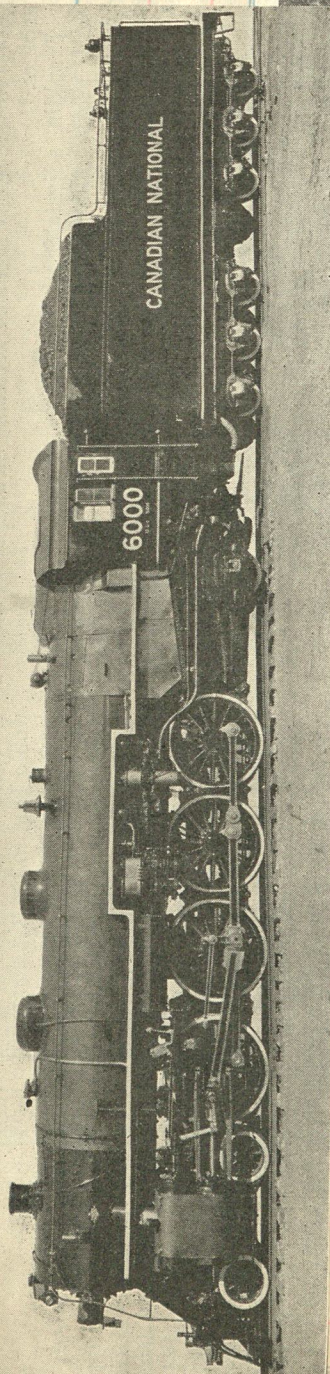


THIRTY-FIVE of the fifty new Mohawks for the New York Central are Alco-built and represent many notable developments in motive power advancement. A new and important trend in locomotive design is evidenced by the fact that 25 of the Alco-built locomotives are constructed and equipped to operate at 80 miles per hour in both passenger and heavy freight service. This is the first time the New York Central is operating dual type locomotives which are suitable for both classes of service. The remaining 10 Alco-built locomotives are designed primarily for fast freight service.

AMERICAN LOCOMOTIVE COMPANY
NEW YORK, N.Y.
30 CHURCH STREET

Canadian Locomotive Co., Ltd.
6000-6015 c/n 1696

Kingston, Ontario
Built 1923



160-161

c/n 2286

Canadian 1945

W. H. Toney

FOR HIGH SPEED PASSENGER AND FREIGHT SERVICE

TWENTY-FIVE of the 35 Alco-built Mohawks are suitable for both fast passenger and fast heavy freight service. They are a further development of previous New York Central locomotives of the same wheel arrangement which for many years have delivered exceptionally fine performances in high speed freight service.

The Dual Type locomotives are constructed to operate at 80 miles per hour and develop a cylinder horsepower of approximately 4400 at 50 miles per hour. Improved counterbalancing in addition to the use of lightweight revolving and reciprocating parts have greatly reduced rail pound when the locomotives are operating at high speeds.

Extra large tenders with capacity for 43 tons of coal and 15,500 gallons of water supplemented with water scooping apparatus, make possible greater serviceability with longer engine runs and more revenue miles in a given period of time.

AMERICAN LOCOMOTIVE COMPANY
NEW YORK, N.Y.
30 CHURCH STREET

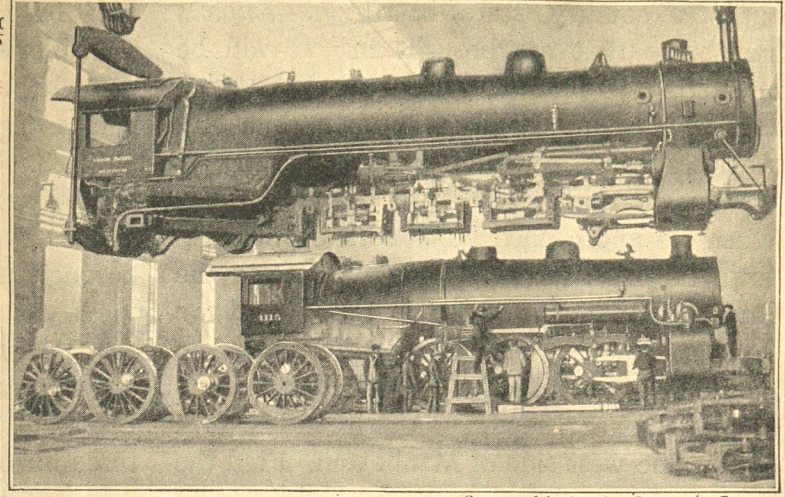
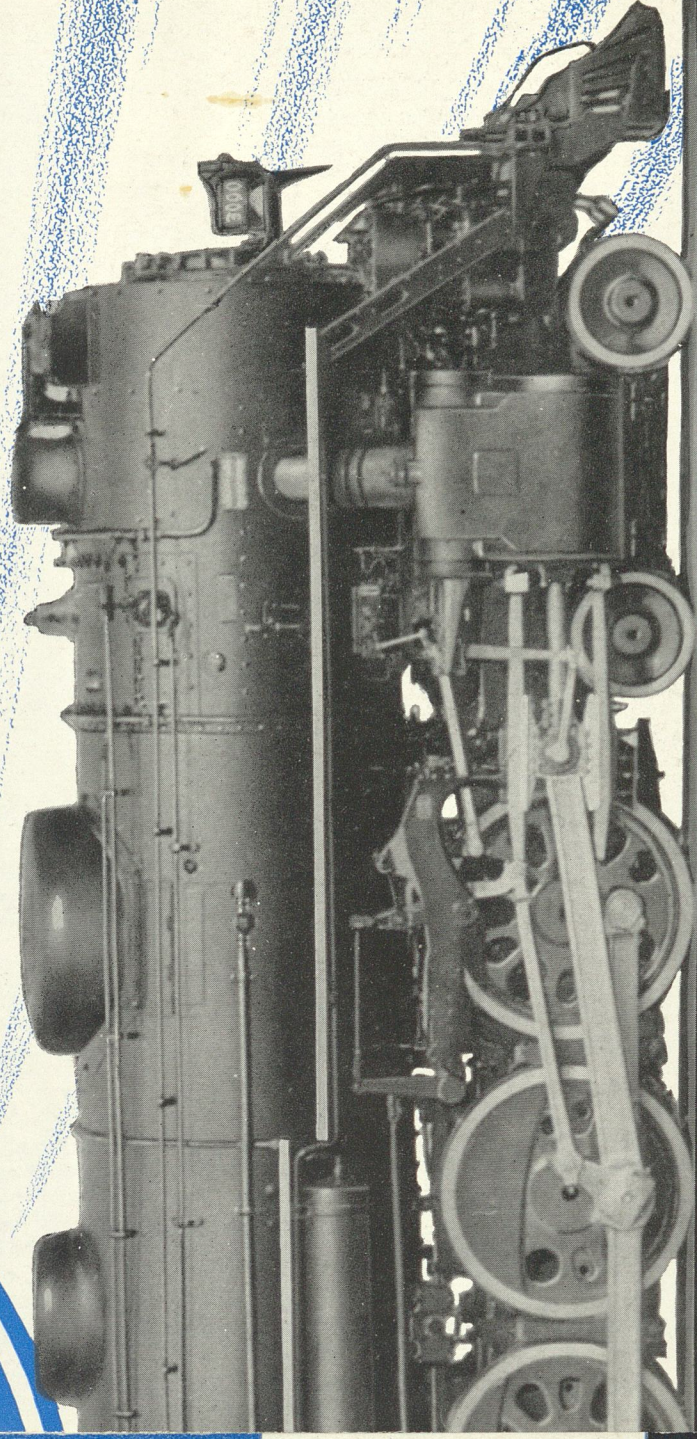
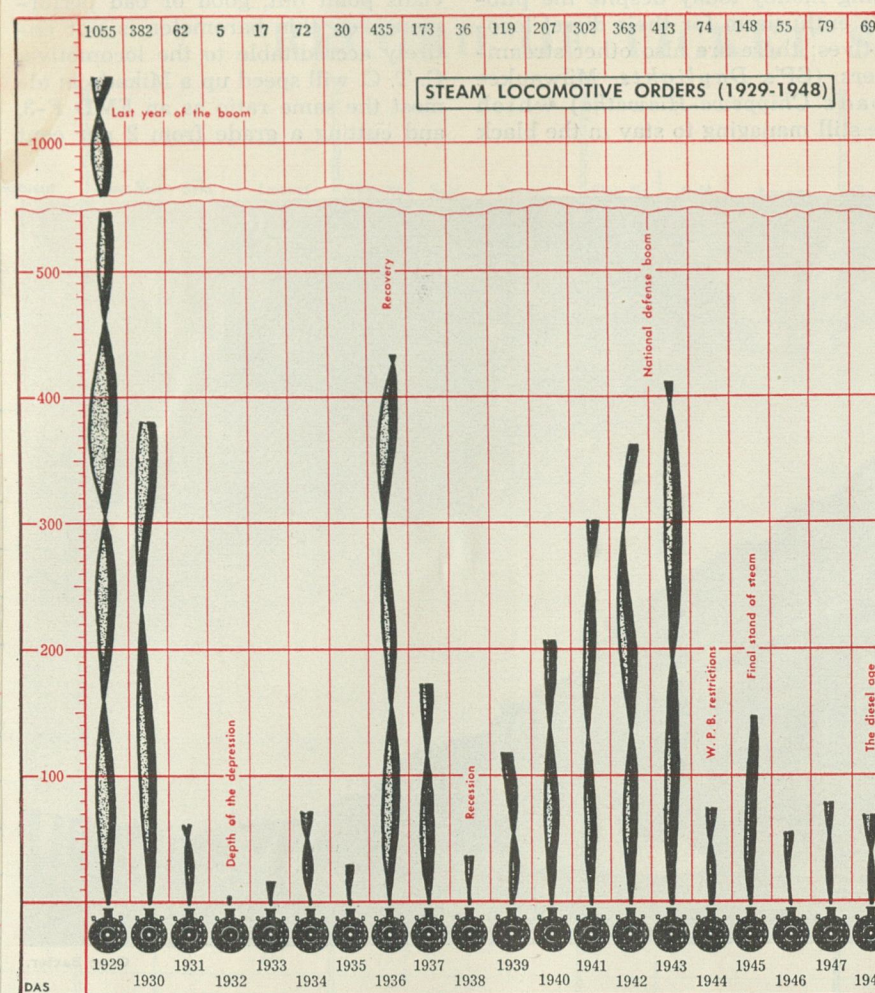


Figure 60. A view in a locomotive works in Schenectady. The engine suspended in the air is ready to have its wheels attached. The engine on the track is almost completed.

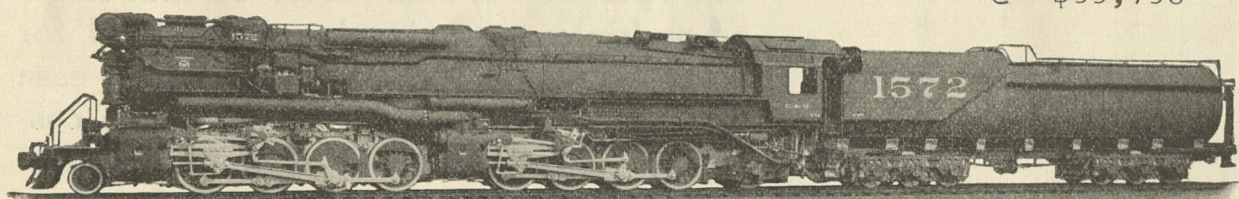
Locomotive Prices in 1925

Road	No.	Type	Weight	Cylinders	Builder	Unit Price	Total Approximate Cost	Order Placed	Equipment Trust Application
Central of Georgia	10	2-8-2	300,500	27 x 30	Baldwin	\$49,435	\$494,350	1924	Mar. 2
	10	2-10-2	382,000	30 x 32	Baldwin	64,161	641,608	July, 1925	Nov. 7
	5	4-8-2	316,500	27 x 28	American	52,850	264,250	March, 1925	Nov. 7
Central of New Jersey	20	2-8-2		27 x 32	Baldwin	53,465	1,069,299	Dec., 1924	Apr. 30
Chesapeake & Ohio	20	2-8-8-2	565,000	23 & 23 x 32	Baldwin	99,790	1,995,812	Sept., 1925	Dec. 12
	40	2-8-2	357,500	28 x 32	American	64,363	2,574,511	Sept., 1925	Dec. 12
	10	2-8-2	357,500	28 x 32	American	66,231	662,305	Sept., 1925	Dec. 12
	5	4-6-2	335,000	27 x 28	American	66,262	331,311	Oct., 1925	Dec. 12
Chic., Rock Island & Pac.	10	0-8-0	230,000	23 1/2 x 30	American	37,522	375,225	Feb., 1925	Aug. 18
	10	2-10-2	391,000	30 x 30	American	58,898	588,985	March, 1925	Aug. 18
Florida East Coast	12	4-8-2	318,000	26 x 28	American	65,403	784,836	Jan., 1925	Feb. 17
	6	0-8-0	216,000	25 x 28	American	41,618	249,708	Jan., 1925	Feb. 17
	15	2-8-2	297,000	26 x 30	American	43,221	648,315	July, 1925	July 11
	6	0-8-0	216,000	25 x 28	American	30,909	185,454	July, 1925	July 11
	10	4-8-2	318,000	26 x 28	American	61,415	614,150	Aug., 1925	Sept. 28
Great Northern	4	2-8-8-2	578,000	29 & 28 x 32	Baldwin	91,000	364,000	Dec., 1924	Jan. 8
Long Island	5	4-6-0	237,000	24 x 28	Penn. R. R.	37,502	185,510	April, 1924	May 6
Missouri Pacific	15	2-8-2	330,000	27 x 32	American	63,873	958,093	Dec., 1924	Feb. 25
	20	2-8-2	330,000	27 x 32	American	55,687	1,113,737	Dec., 1924	Feb. 25
	10	4-6-2	290,000	27 x 28	American	54,877	548,771	Dec., 1924	Feb. 25
	5	0-8-0	224,900	25 x 28	Baldwin	41,612	208,059	Dec., 1924	Feb. 25
New York, New Haven & Hartford	5	A.C. Elec. Frt.			Am.-Gen. Elec.	95,400	477,000	Oct., 1924	Jan. 29
	2	A.C. Elec. Sw.	120,000		Am.-Gen. Elec.	89,000	178,000	Oct., 1924	Jan. 29
	2	D.C. Elec. Sw.	120,000		West-Baldwin	33,795	67,590	Oct., 1924	Jan. 29
	9	4-8-2	334,000	27 x 30	American	60,250	545,639	1923	Jan. 29
	1	4-8-2	345,000	27 x 30	American	84,625	84,625	1923	Jan. 29
	5	0-8-0	216,000	25 x 28	American	40,400	203,883	1923	Jan. 29
	10	0-8-0	245,000	22 x 28 (3 cyl.)	American	49,750	497,500	July, 1924	Jan. 29
Reading Company	25	2-8-0	315,585	27 x 32	Baldwin	63,405	1,585,119	1923	Jan. 9
	10	4-6-2				50,213	502,126		Jan. 9
	5	0-8-0	280,610	26 x 32	Baldwin	49,841	249,203	March, 1924	Jan. 9
	25	2-8-0			Baldwin	56,447	1,411,175	Dec., 1924	Apr. 8
	5	4-6-2			Baldwin	52,147	260,735	Dec., 1924	Apr. 8
Southern Pacific	15	4-10-2	438,000	25 x 28 & 32 (3)	American	80,901	1,213,520	Dec., 1924	June 24
	18	4-8-2				79,500	1,431,000		June 24
	10	0-6-0				36,623	366,230		June 24
Seaboard Air Line	20	2-8-2	301,000	26 x 30	Baldwin	60,700	1,214,000	July, 1924	Jan. 20
	10	2-8-2	320,900	27 x 28	Baldwin	53,950	539,500	July, 1924	Jan. 20
	20	2-8-2	300,000	26 x 30	American	48,000	1,440,000	Apr., 1925	Dec. 17
	17	2-8-2	302,000	26 x 30	Baldwin	62,000	248,000	Aug., 1925	Dec. 17
	4	2-8-2	302,000	26 x 30	Baldwin	42,800	428,000	Apr., 1925	Dec. 17
	1	4-8-2	320,900	27 x 28	Baldwin	56,000	336,000	Aug., 1925	Dec. 17
	6	4-8-2	320,500	26 x 30	Baldwin	56,000	336,000	Aug., 1925	Dec. 17
Texas & Pacific	10	2-10-4	440,000	29 x 32	Lima	100,489	1,004,890	July, 1925	Aug. 31
	5	4-8-2	370,000	27 x 30	American	85,940	429,700	July, 1925	Aug. 31
	8	0-8-0	220,000	22 x 28	Baldwin	48,795	390,360	July, 1925	Aug. 31
	2	0-8-0			Baldwin	62,265	124,530	July, 1925	Aug. 31



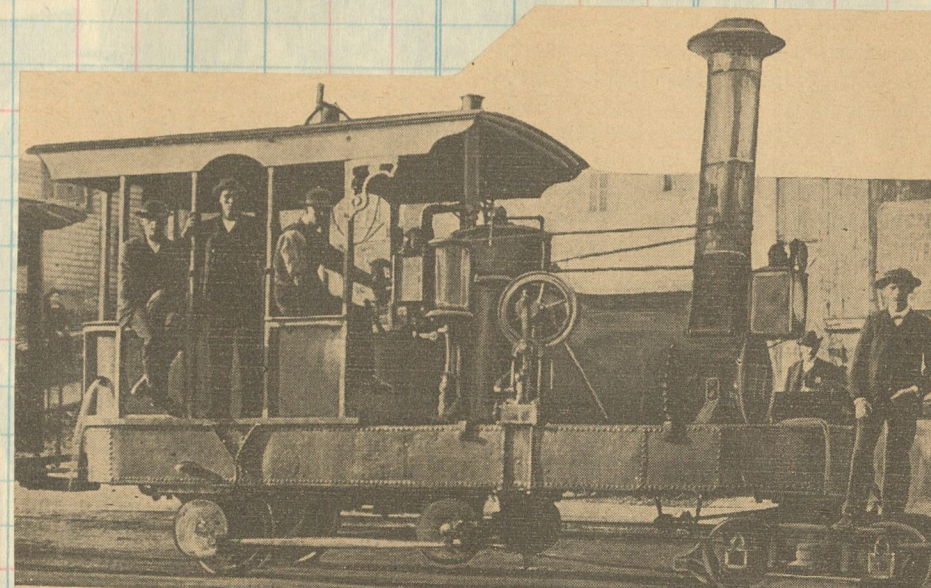
U.S. LOCOMOTIVES IN SERVICE

Dec. 31	Total	Diesel electric units	Steam	Electric units	Other
1929	57,571	22	56,936	601	12
1932	53,316	77	52,492	725	22
1939	42,511	510	41,117	843	41
1944	43,612	3,049	39,681	863	19
1947	41,719	5,772	35,108	821	18
1951	40,036	17,493	21,747	780	16
1954	32,872	23,531	8,650	656	35
1955	31,429	24,786	5,982	627	34
1956	30,433	26,081	3,714	606	32
1957	30,248	27,186	2,447	585	30
1958	29,513	27,575	1,350	556	32



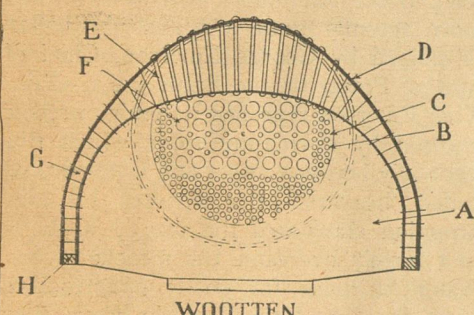
@ \$99,790

Construction No. 58,964

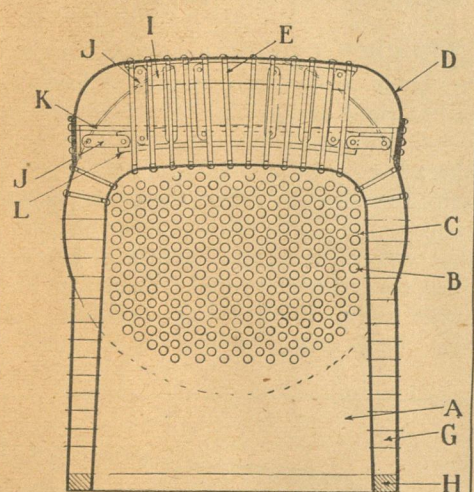


OLD JOE BELL pulled summer cars over the route of the "Dummy" on Cincinnati's Delta Ave., back in 1888. Be-derbyed Will Needles is at the throttle

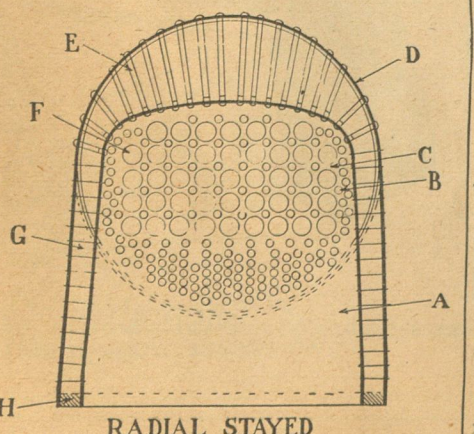
FIREBOX DESIGNS



WOOTTEN

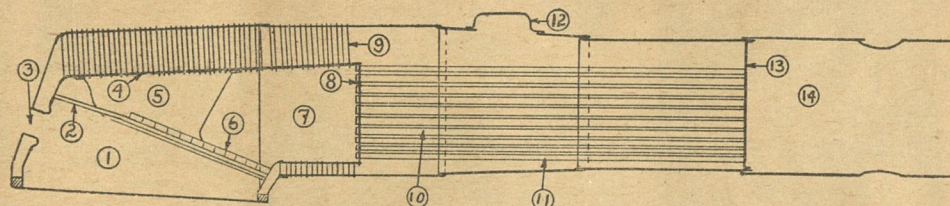


BELPAIRE

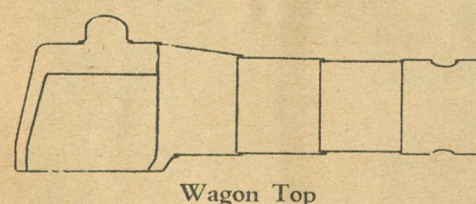


RADIAL STAYED

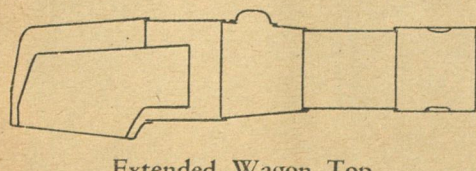
Methods of staying the firebox



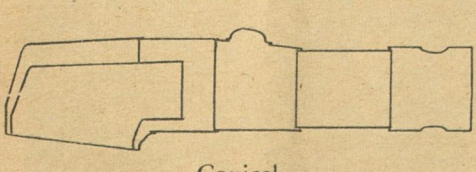
Typical conical boiler, showing principal parts. 1 and 5, firebox interior; 2, arch tubes; 3, firebox door in backhead; 4, crown-sheet; 6, brick arch; 7, combustion chamber; 8, back tube sheet; 9, staybolts; 10, superheater flues; 11, boiler tubes; 12, steam dome; 13, front tube sheet; 14, smokebox



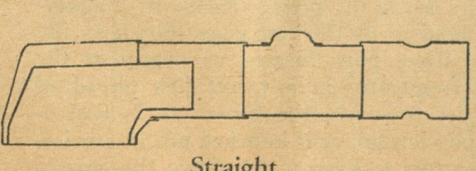
Wagon Top



Extended Wagon Top

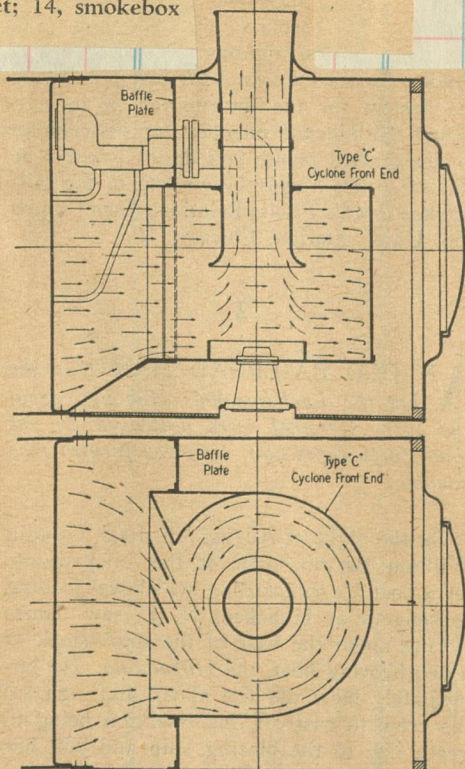


Conical



Straight

Symbols for firebox parts: A, firebox throat sheet; B, firetube; C, rear flue sheet; D, roof sheet; E, staybolt; F, superheater flue; G, water leg; H, mud ring; I, sling stay tee; J, sling stay; K, boiler cross brace; L, crown bar

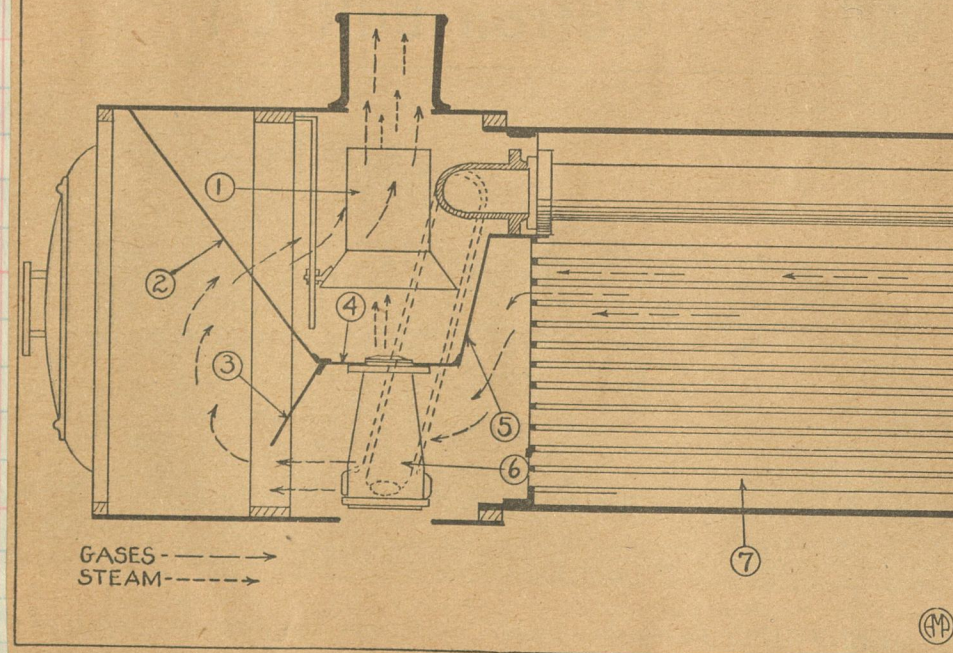


CYCLONE FRONT-END, a design of spark arrestor sponsored by the Northern Pacific

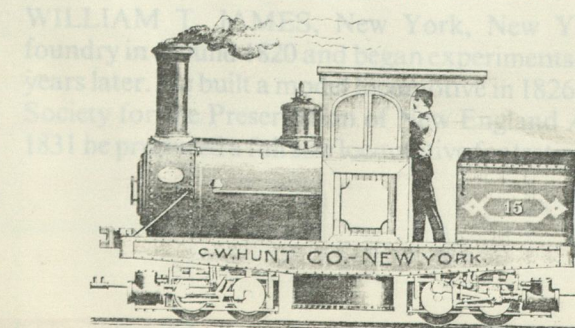
DESCRIBE the cyclone front end.

This cinder arrestor, designed to permit the burning of sub-bituminous coal with a minimum of spark emission, consists of a sheet metal drum, with breaker strips around the interior and deflecting vanes at the intake, so that exhaust gasses rushing forward through the boiler tubes are given a whirling motion. This delays the cinders in their passage through the smokebox, breaking them up and extinguishing them before they are discharged through the stack. No netting is used with the design, which was developed by the Northern Pacific Railway.

FRONT END ARRANGEMENT



REPRESENTATIVE smokebox arrangement. 1. Petticoat Pipe; 2. Deflector; 3. Diaphragm Apron; 4. Table Plate; 5. Diaphragm; 6. Steam Nozzle; 7. Fire Tubes



Hunt's curious duplex locomotive designed for industrial railways was made on Staten Island, New York (American Railroad Journal, November 1889).

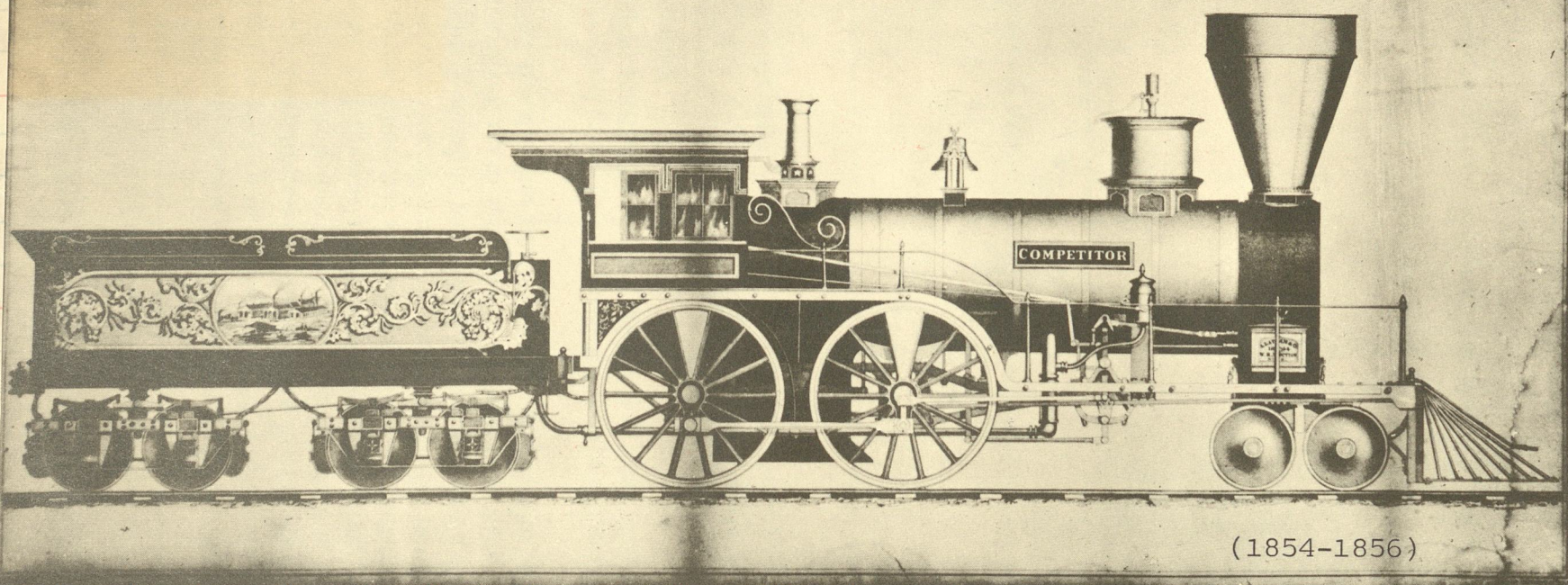
LOCOMOTIVE & TENDER

BY JOHN P. LAIRD

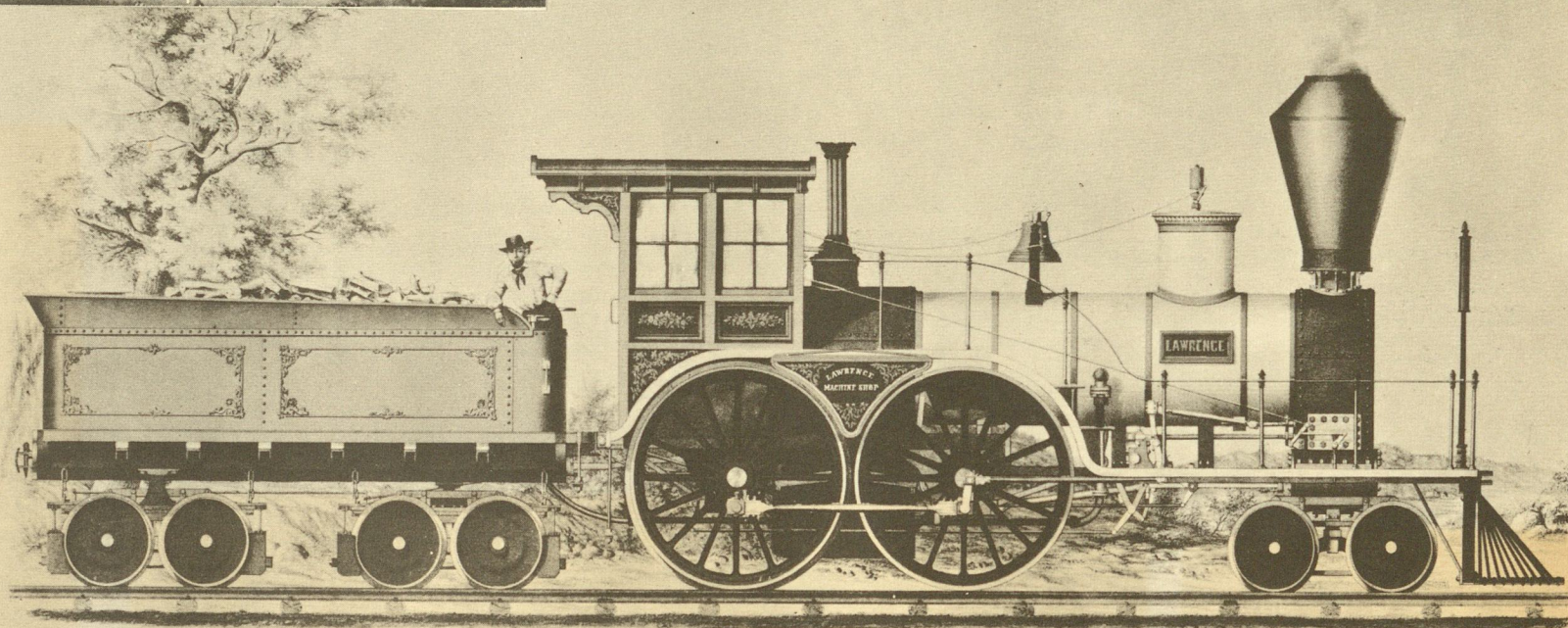
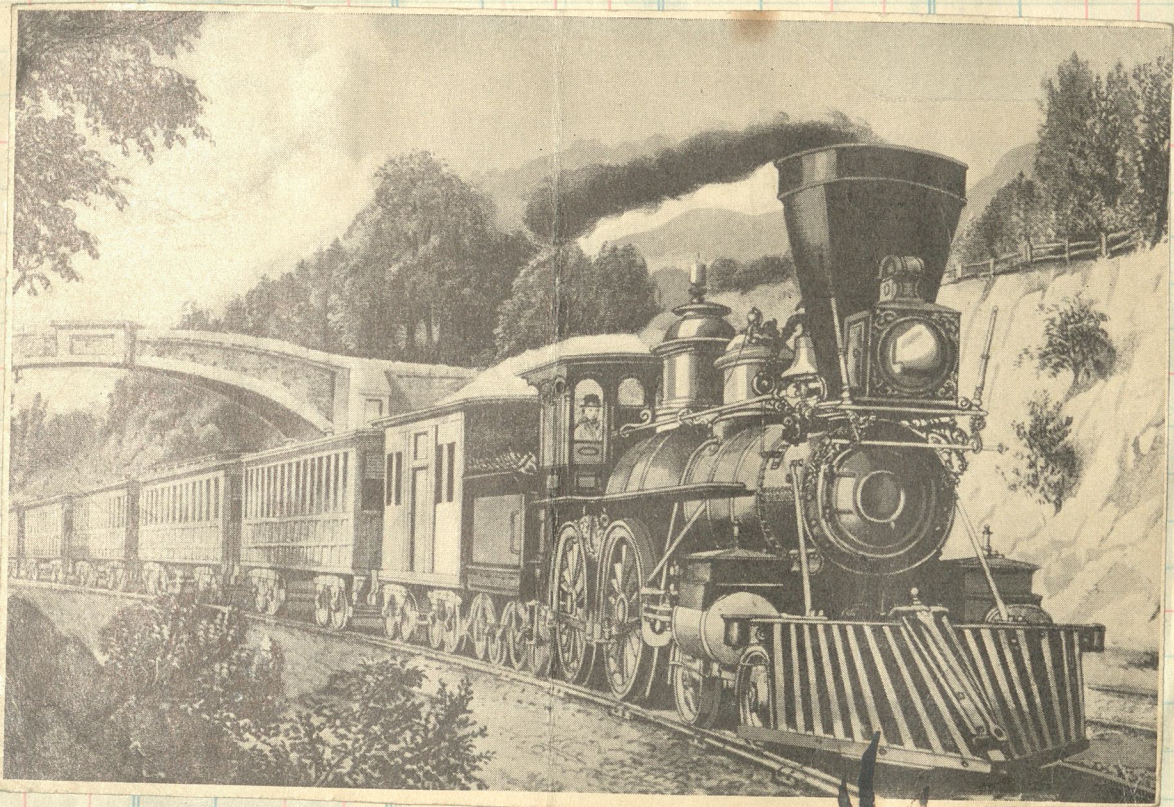
BUILT AT.

LATHAM & CO'S WORKS,

W. R. JUNCTION, VT.



(1854-1856)

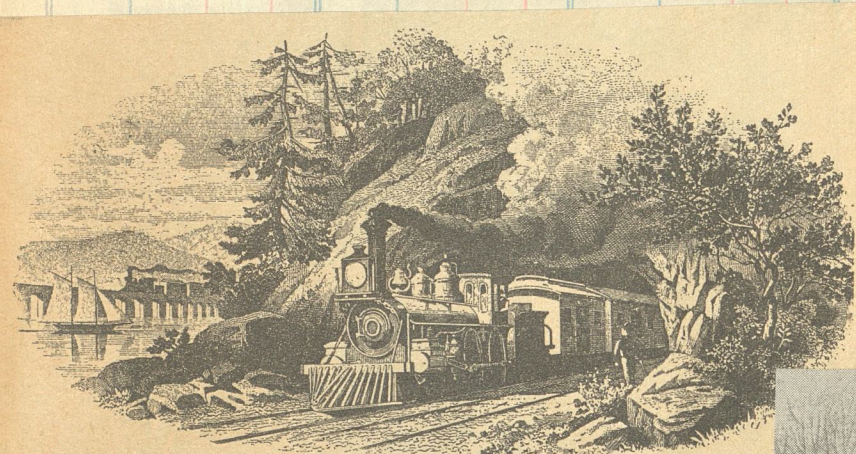


TWENTYFIVE TON PASSENGER ENGINE.

LAWRENCE MACHINE SHOP

LAWRENCE MASS.

(1852-1857)



THE MASON MACHINE WORKS,
TAUNTON, MASS.

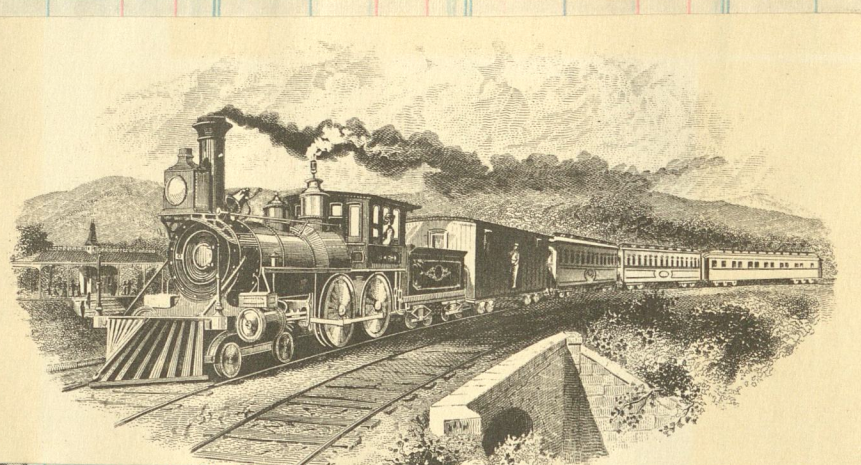


WM. MASON, President. WM. H. BENT, Treas. FRED'K MASON, Agent.

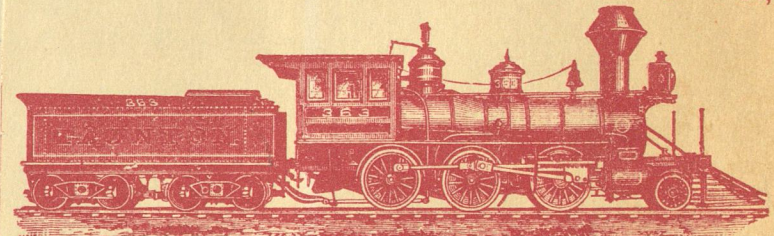
Builders of all kinds of

LOCOMOTIVES,

INCLUDING DOUBLE-TRUCK LOCOMOTIVES FOR WIDE OR NARROW-GAUGE RAIL-ROADS. ALSO ALL KINDS OF COTTON MACHINERY.



TAUNTON LOCOMOTIVE MANUF'RING CO.,



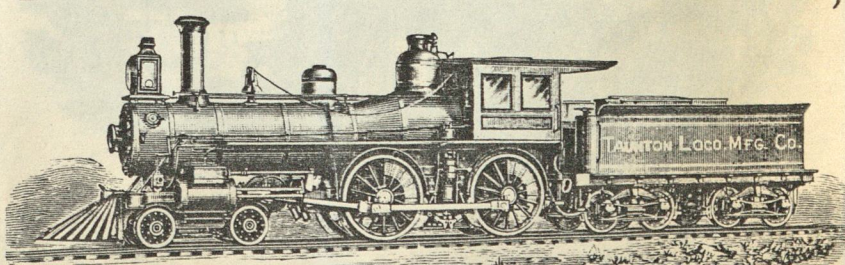
P. I. PERRIN, Agent and Treasurer, TAUNTON, MASS.

(ESTABLISHED IN 1846)

(1846-1889)

ESTABLISHED IN 1846.

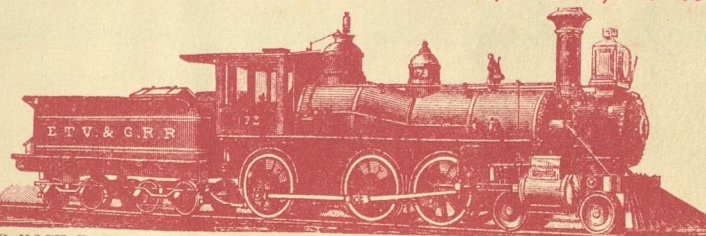
TAUNTON LOCOMOTIVE MANUFACTURING CO.,



TAUNTON, MASS.

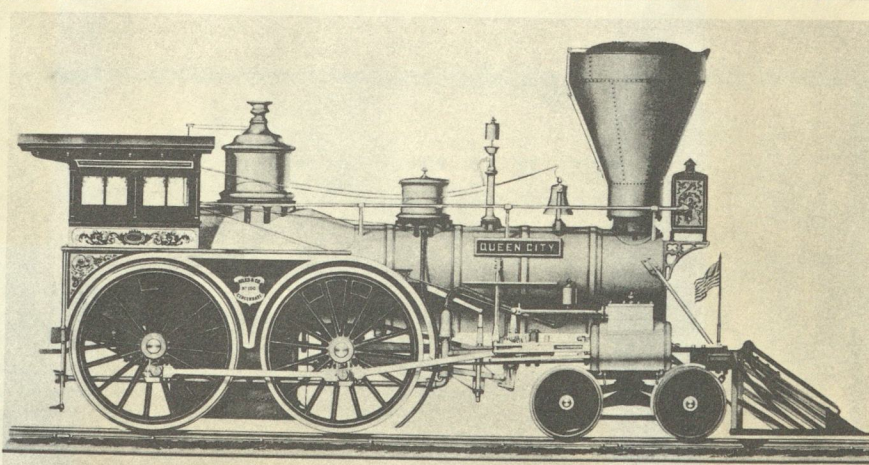
P. I. PERRIN, Agent and Treasurer.

NEW YORK LOCOMOTIVE WORKS, ROME, N. Y.

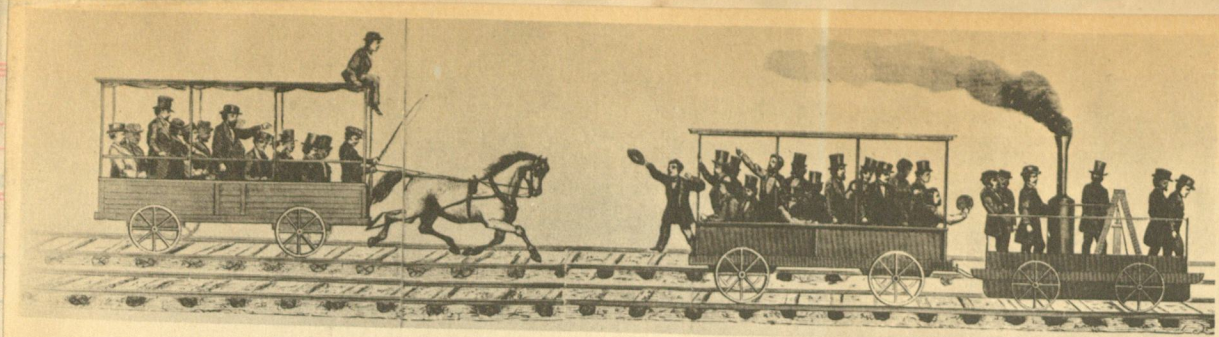


T. G. NOCK, President. T. H. SICKLER, Sec'y and Treas. A. M. WHITE, Supt.
NEW YORK OFFICE: 31 1-2 Pine Street.
Special facilities for supplying Locomotives on the Car Trust plan, with payments extending over a period of ten years if desired.

The "Queen City" was one of many successful locomotives built in 1857 by Niles & Co. in Cincinnati, Ohio.



SELLER
DATE
FORM



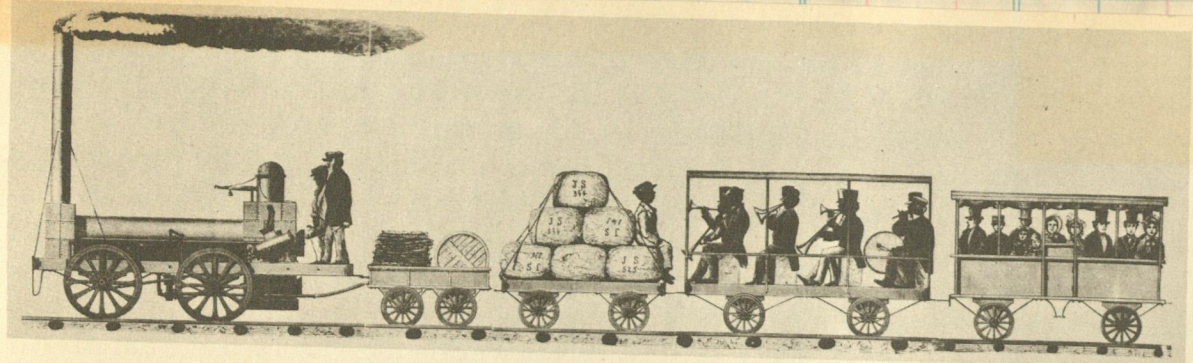
3. Peter Cooper's Tom Thumb in its famous race with the horsecar, 1830.



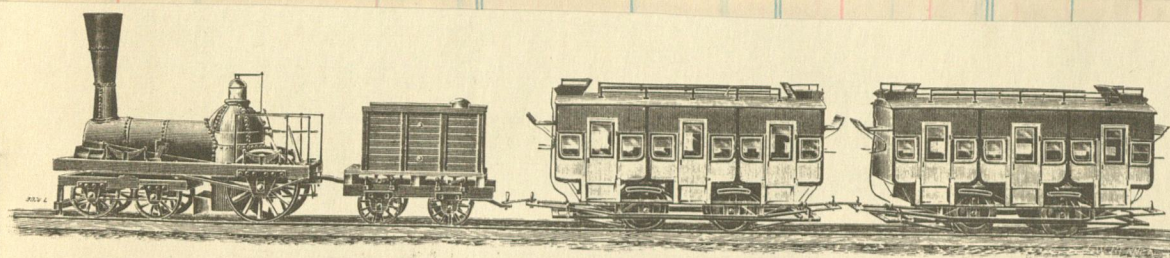
The "John Bull," First Locomotive Built with a Cowcatcher

Amount Clos. No.

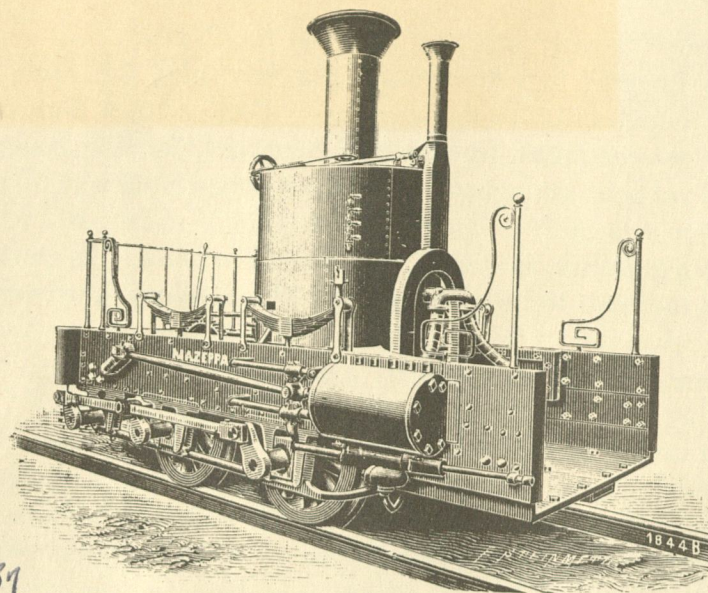
No. Sold Amount Clos. No. Sold Amount



4. The West Point of the Charleston & Hamburg Railroad, 1831.

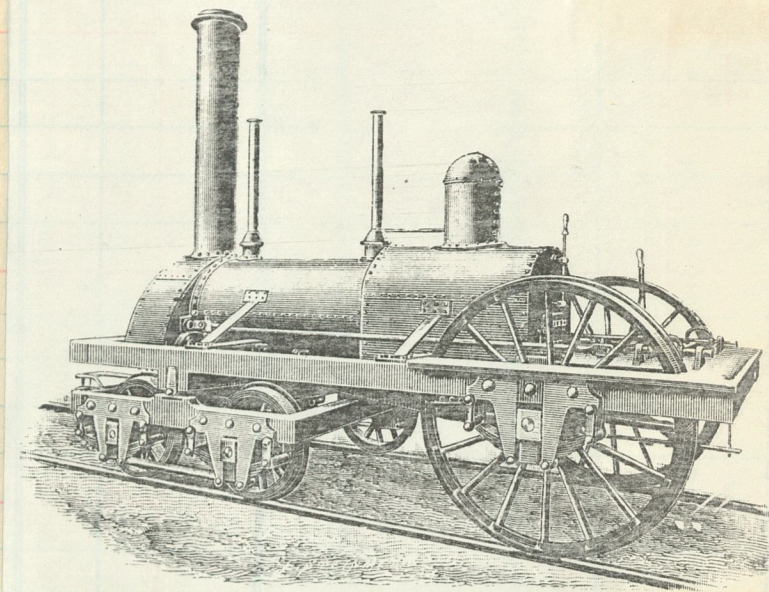


13. Baldwin's Lancaster of the Philadelphia & Columbia Railroad, 1834.

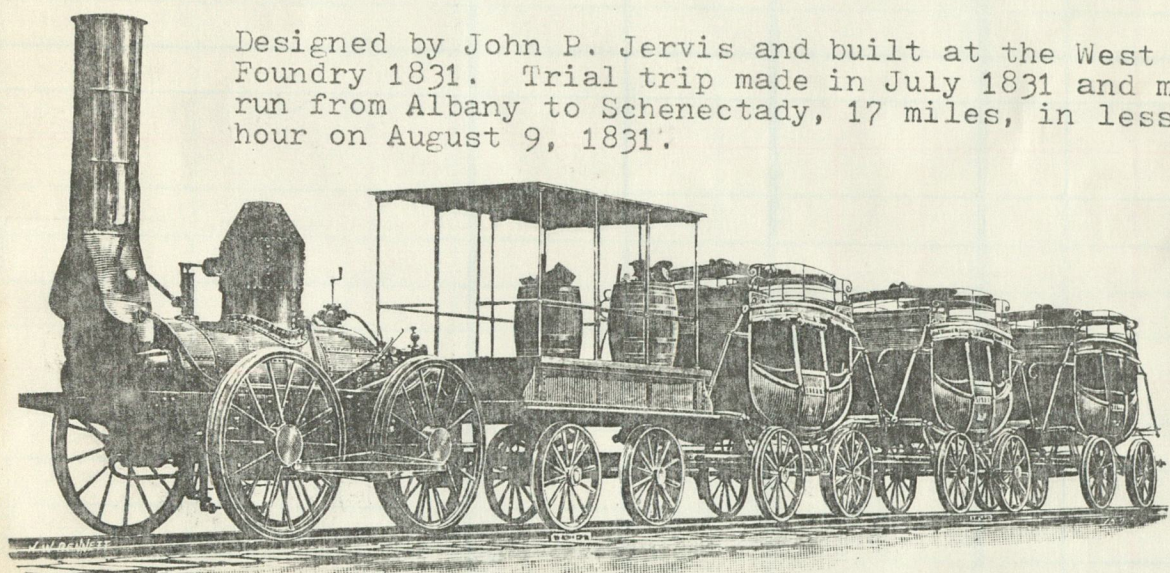


1834

16. One of the first "crab" type locomotives on the Baltimore & Ohio Railroad.

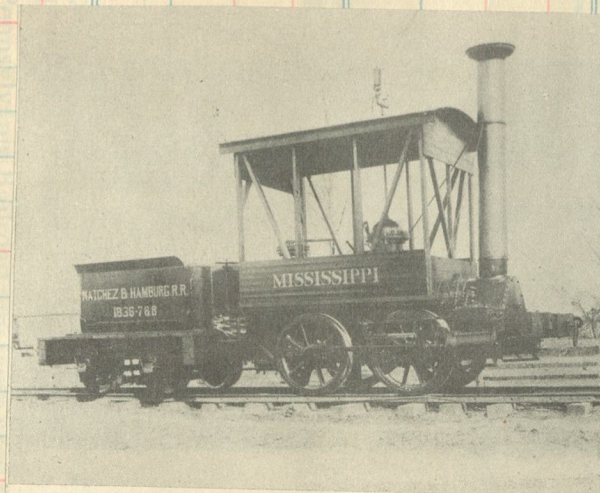


9. The Brother Jonathan, 1832.



Designed by John P. Jervis and built at the West Point Foundry 1831. Trial trip made in July 1831 and made the run from Albany to Schenectady, 17 miles, in less than an hour on August 9, 1831.

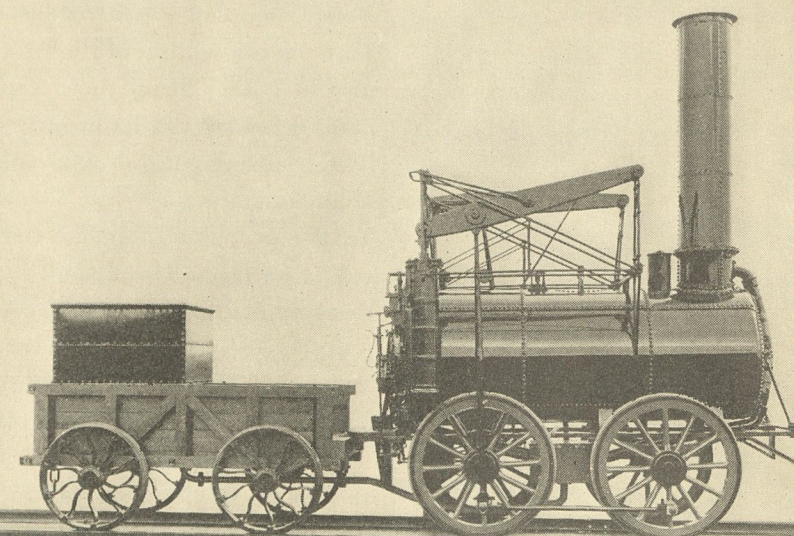
6. The DeWitt Clinton of the Mohawk and Hudson Railroad, 1831.



Courtesy Illinois Central System

TO HAUL COTTON TO THE RIVER

Several of the earliest railroads in the Mississippi Valley were short lines in Louisiana and Mississippi to haul cotton to the river steamboats. This engine, used in 1836 on such a line running out from Natchez, is the first to run on any part of the Illinois Central system of to-day.



Stourbridge Lion

[33]

LOCOMOTIVE ENGINES.

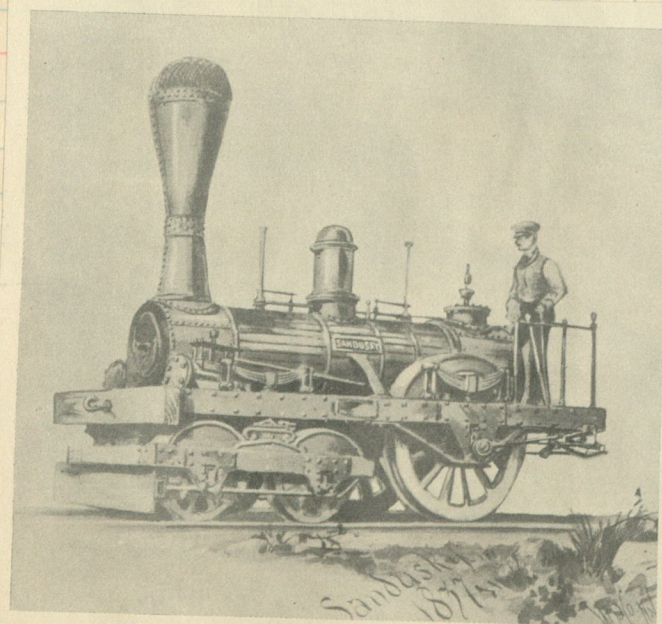
EASTWICK & HARRISON,
LOCOMOTIVE AND STATIONARY ENGINE MAKERS,
AND GENERAL MACHINISTS.
North-west corner of James and Twelfth Street,
ON THE WILLOW STREET RAIL ROAD,
PHILADELPHIA.

Are prepared to receive orders for Machinery in their line, which they will engage to execute with promptness, and in a workmanlike manner.

They would particularly call the attention of Rail Road Companies to the improvements they have made in Locomotives, by which either Anthracite Coal or Wood can be used, with perfect facility, in boilers of the ordinary horizontal form. Also, to their eight-wheel Engines, which are admirably adapted to roads having high grades to overcome, and are capable of drawing heavier loads, with less injury to the road, than any other description of Engine of the same weight used in this country.

Satisfactory references can be given as to the power and workmanship of their Engines, by those who have used them.

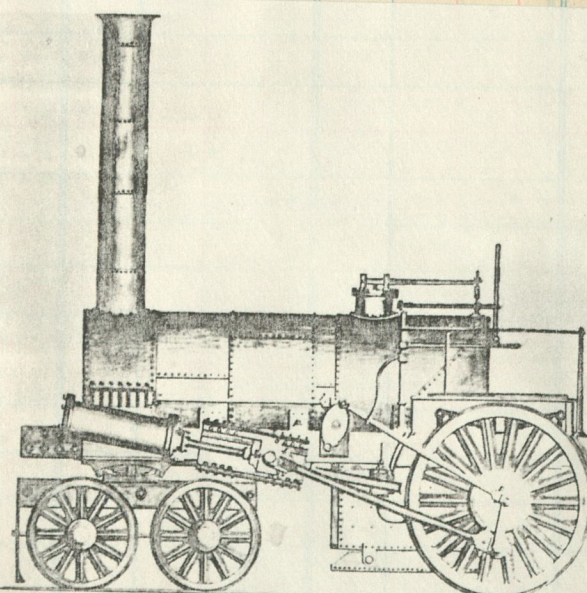
A. M. EASTWICK JOSEPH HARRISON, JR.



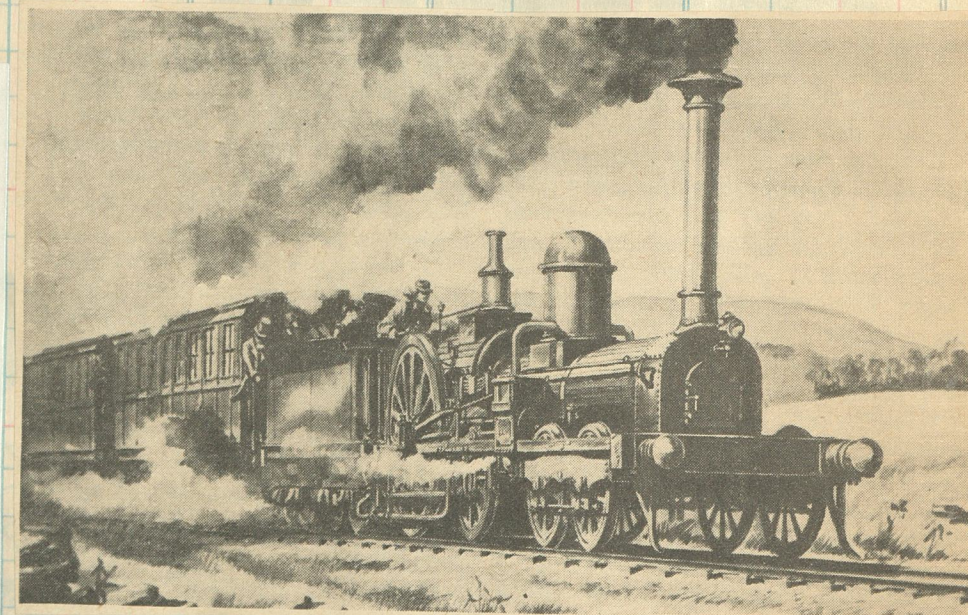
Courtesy American Locomotive Works.

A "TRIPLE FIRST"

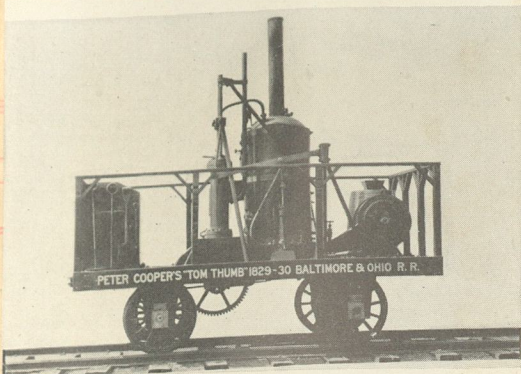
The "Sandusky," said to have been the first locomotive with a steam whistle. It was the first to run in the state of Ohio, and by its gauge of 4 feet 10 inches established what was long the standard gauge of that state. It was the first locomotive built by Thomas Rogers, of Paterson, New Jersey, whose works grew into the American Locomotive Company. Rogers was one of the great pioneer builders. He originated the iron wheel, replacing wooden spokes with an iron rim, and the use of weights in the wheel to counter-balance the weight of the moving parts of the machinery attached to the wheels.



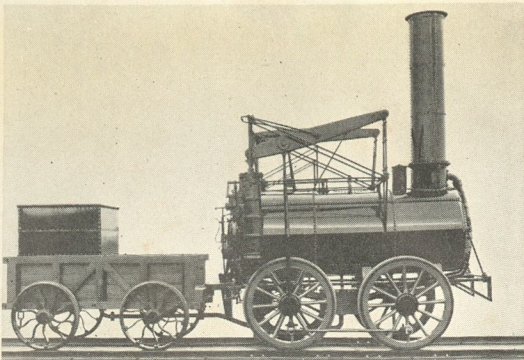
The "Orange" as originally built in 1837. The locomotive weighed six tons and was very successful for it operated twenty six years. It had a wood frame.



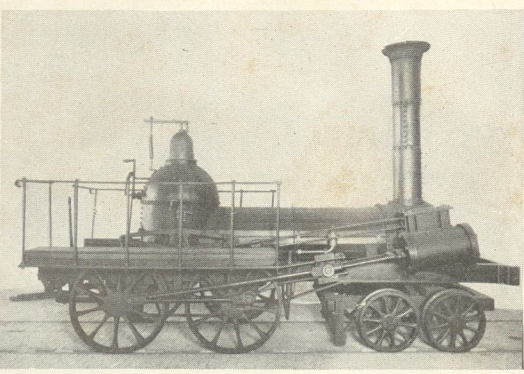
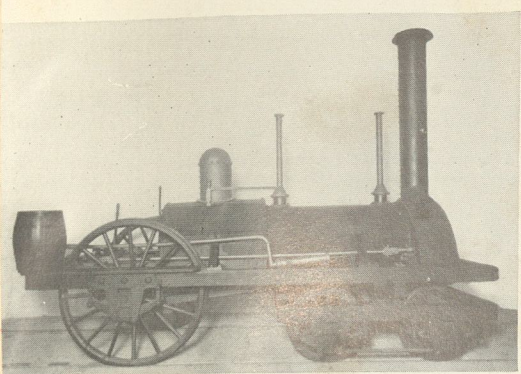
The "Lightning", first engine to run a mile in a minute.



Courtesy Delaware & Hudson Railroad



Courtesy Railway Age



THE AMERICAN IRON HORSE TAKES FORM

The pre-Rocket engine *Tom Thumb*, shown as it appeared in replica at the Baltimore & Ohio's centenary, is important only as establishing a "first." The same is true of the *Stourbridge Lion*, to the right of *Tom Thumb*. The third picture is the *John Bull*, with the first leading truck ever applied to a locomotive. (This engine is also known as *Jervis's Experiment*.) The last engine is the *Mercury*, with an extra pair of driving wheels made possible by Harrison's spring and equalizer. With it, the American iron horse was rapidly becoming the fleet steed we know in mechanical essentials.

343. What were the first locomotives to be placed in service on the American railroads?

The first locomotive to be placed in regular service on any American railroad was the "Best Friend of Charleston," built at the West Point Foundry, New York. It was placed in service on the South Carolina Railroad (now the Southern) at Charleston, S. C., December 25, 1830.

The second locomotive, the "West Point," built at West Point Foundry, was placed in service on the South Carolina Railroad July 15, 1831.

The "De Witt Clinton," the first locomotive in New York State, also built at West Point Foundry, made its initial run on the Mohawk & Hudson Railroad (now part of the New York Central) from Albany to Schenectady, August 9, 1831.

The "York," built by Phineas Davis, York, Penna., was tried out on the Baltimore & Ohio Railroad July 12, 1831, and was placed in service at Baltimore shortly thereafter.

The "John Bull," built in England, was delivered to the Camden & Amboy Railroad (now a part of the Pennsylvania) August 31, 1831, and was placed in regular service at Bordentown, N. J., November 12, 1831. This was the first locomotive to run on the present Pennsylvania Railroad lines.

383. Who built the first steam locomotives in this country?

As early as 1804, Oliver Evans, pioneer steam engine builder, of Philadelphia, amazed the world with his wonderful "Orukter Amphibolos," which was propelled through water and over land by steam power.

The first steam engine to run on rails in America was built by John Stevens in 1825 and was operated on a circular experimental track on his estate at Hoboken, New Jersey. Neither Evans' contraption nor Stevens' engine was ever put to practical use.

The first American locomotive actually to be operated on a common-carrier railroad in the United States was the "Tom Thumb," an experimental engine, built in 1829 by Peter Cooper, New York ironmaster, and given a trial run on the Baltimore & Ohio Railroad, at Baltimore, in September of that year. Its famous race, August 25, 1830, with a horse-drawn car, which the latter won, added a colorful chapter to American railway history.

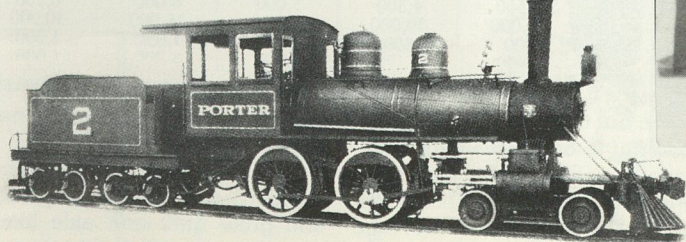


Illustration No. 2, from photograph of 10 x 16 cylinders, 36 inches gauge locomotive, exported to Central America.

Class B-4-T, Light "American" or "Eight-Wheel" Passenger Locomotive

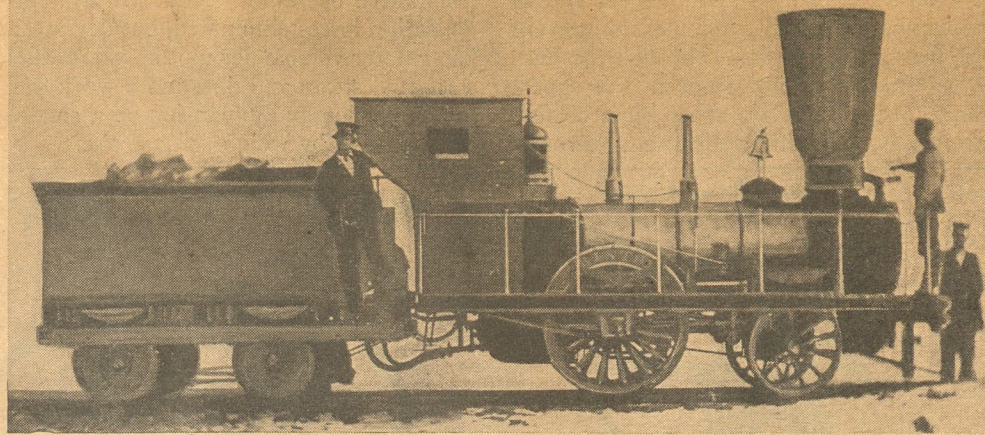
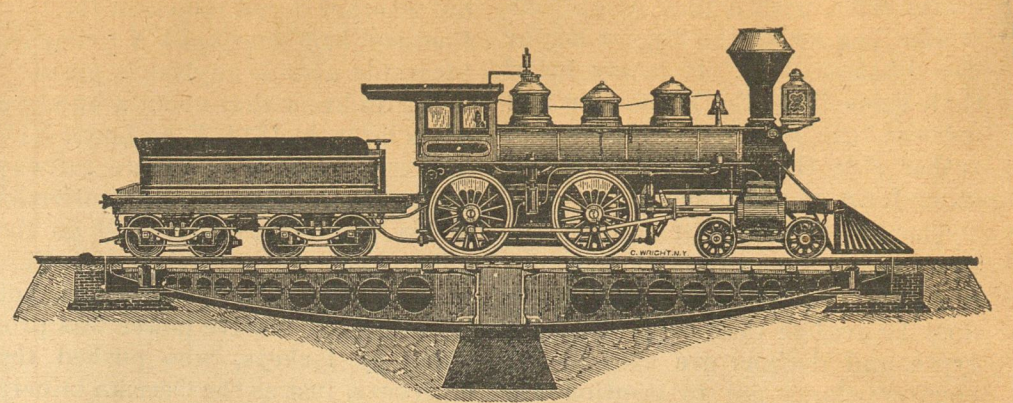
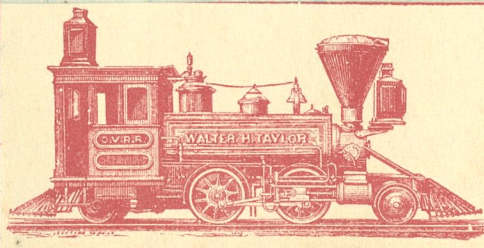


Photo from Railroadians of America

WHILE not the oldest locomotive photo in existence, this daguerreotype of the *Bristol* portrays the earliest engine in America to be recorded by the camera. Built by The Locks & Canals Co., of Lowell, Mass., in 1835, she posed for this portrait in the early '40s

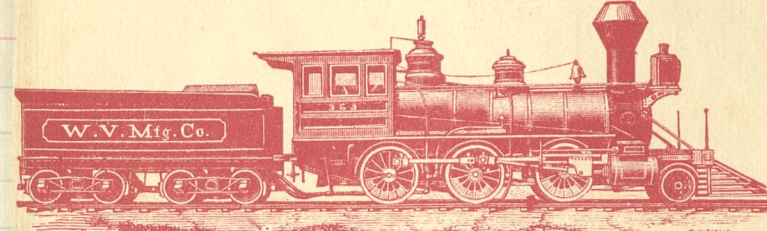


The firm of Wm. Sellers, Philadelphia, famous today as a manufacturer of steam injectors, advertised this nifty little item (minus locomotive) back in 1886



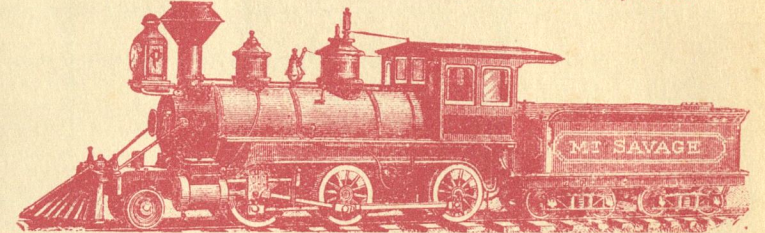
Thos. W. Godwin & Co.,
VIRGINIA IRON WORKS
Norfolk, Va.,
MANUFACTURERS OF
LOCOMOTIVES
FOR
NARROW-GAUGE ROADS,
AND
LUMBERMEN'S LOCOMOTIVES.

WYOMING VALLEY MANUFACTURING COMPANY,

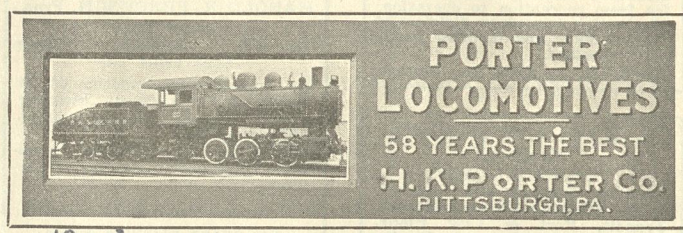


Builders of Narrow-Gauge and Mine Locomotives, Hoisting and Mining Machinery,
WILKESBARRE, PA.

MT. SAVAGE LOCOMOTIVE WORKS
MT. SAVAGE, ALLEGHANY COUNTY, MD.



STANDARD NARROW GAUGE LOCOMOTIVES.
THOMAS B. INNESS & CO., Sales Agents, Boreel Building, 115 Broadway, New York.



1923
Y AGE March 4, 1922



January 6, 1923 RAILWAY

PORTER LOCOMOTIVES

56 years of building locomotives produces the PORTER of today. It is as strong and rugged—and still as simply designed, as we can make it.

We believe it is really a superior locomotive.

H. K. Porter Company
Pittsburgh, Pa.

Porter Locomotives

Represent
57 Years of Quality
not Quantity
Production
Good Engines Always.

H. K. PORTER COMPANY
ESTABLISHED 1865
Union Bank Building
PITTSBURGH - PENNA.

PORTER STEAM LOCOMOTIVES

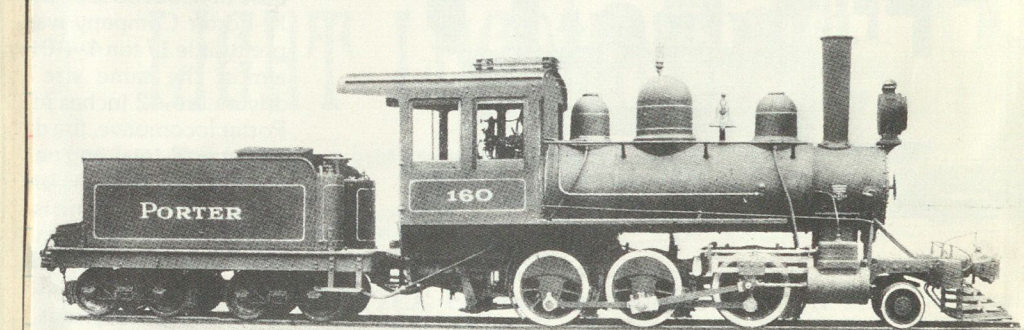
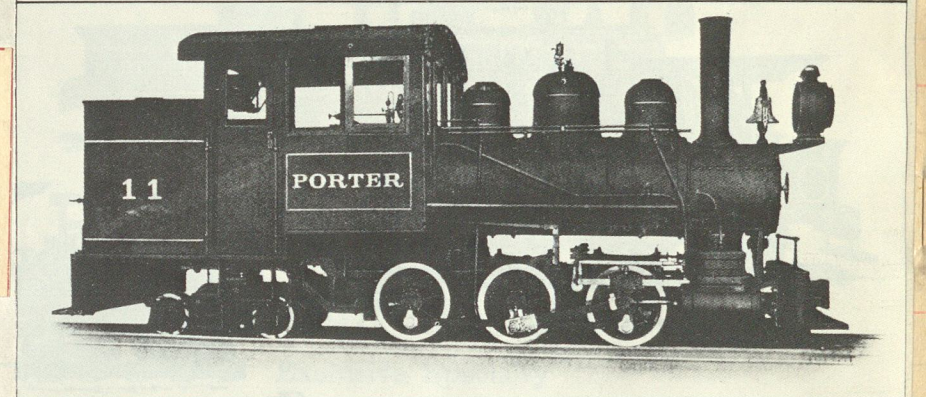
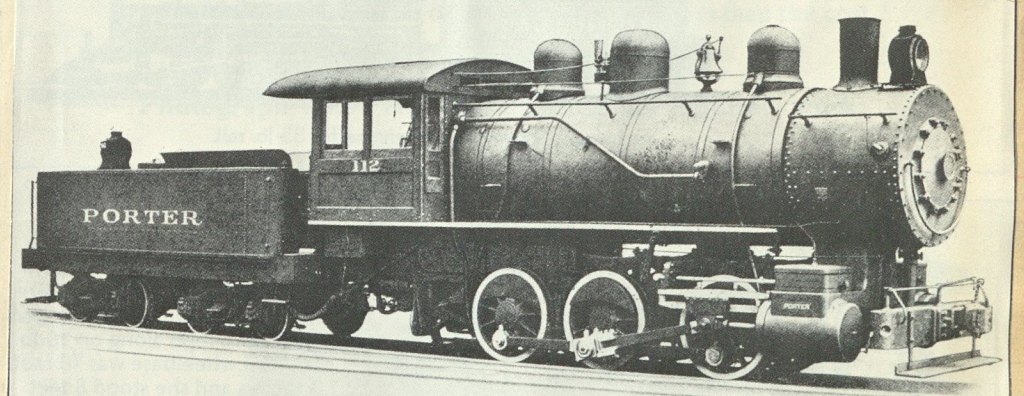
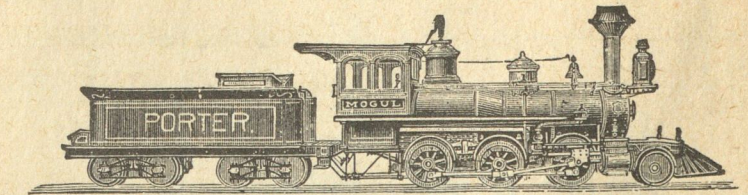


Illustration No. 160, from photograph of 10x16 cylinders, coal-burning locomotive, 36 inches gauge of track, for banana plantation in Central America



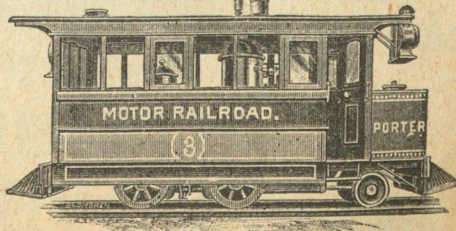
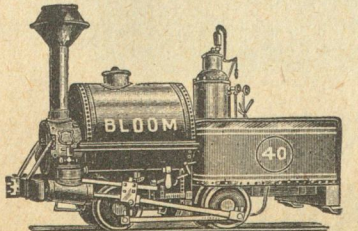
1890



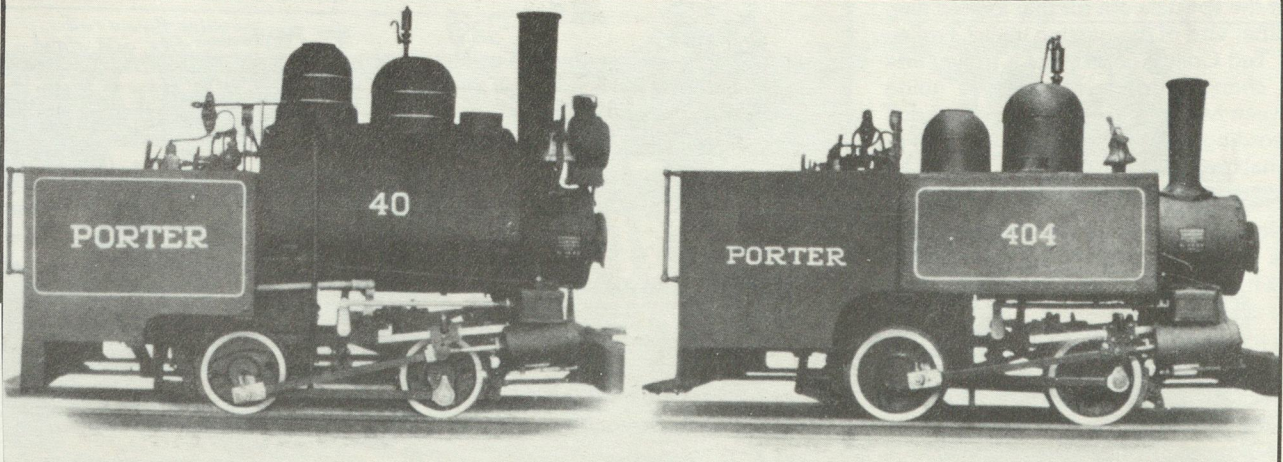
H. K. PORTER & CO.,
BUILDERS OF LIGHT LOCOMOTIVES,
PITTSBURGH, PENNA.

Locomotives for any practical gauge of track: best work and material: fitted to templates and gauges; interchangeable parts always kept on hand. For passenger, freight, switching, mines, logging roads, street railroads, plantation tramways, contractors' work, etc.

ILLUSTRATED CATALOGUE MAILED ON APPLICATION.



Noiseless and Smokeless MOTORS, all Sizes and Gauges. Contractors', and Furnace and Mill Locomotives, narrow and wide gauges, kept on hand completed ready for shipment.



Locomotive, 26 inch gauge, cylinders 5 x 8 inches. Porter catalog.

A locomotive, 30 inch gauge, cylinders 5 x 10 inches. Porter catalog.

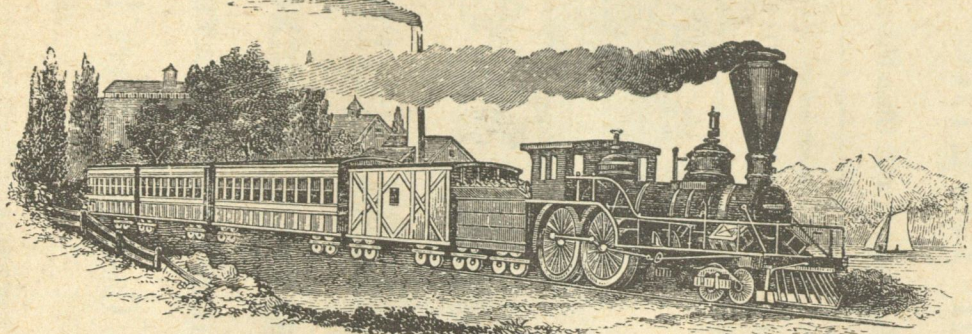
LIGHT LOCOMOTIVES BUILT BY H. K. PORTER & CO., PITTSBURGH, PA.

GAZET

STEAM ENGINES

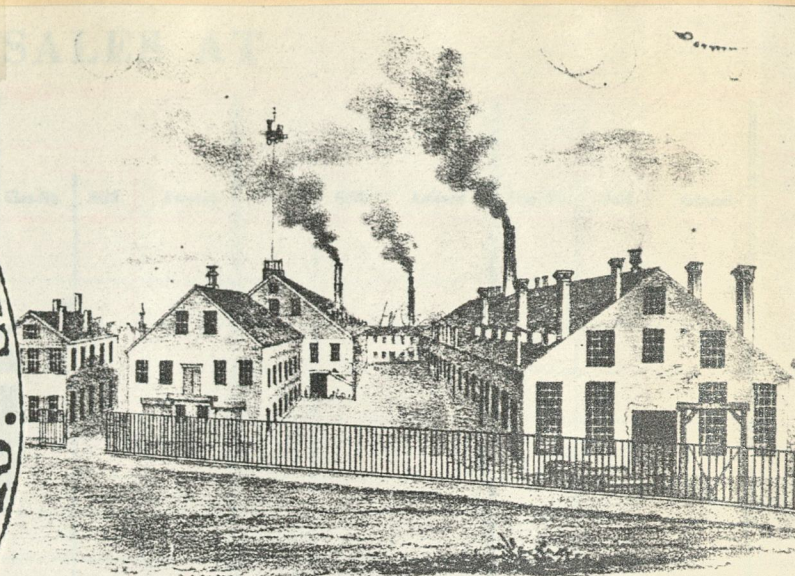
GLOBE LOCOMOTIVE WORKS.

INCORPORATED, MARCH 28, 1854.



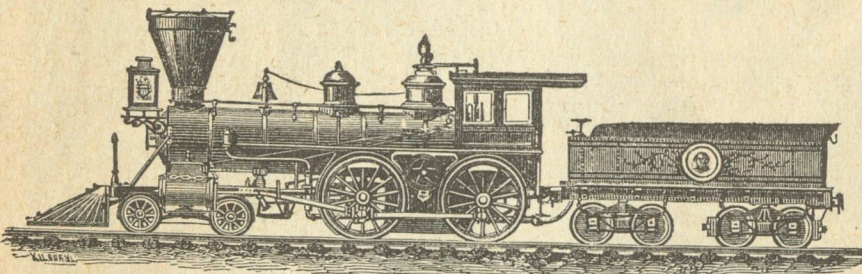
Cor. of A and First Streets, South Boston, Mass.

ADDRESS, (1848-1864)
JOHN SOUTHER, Pres., or D. N. PICKERING, Treas.



BOSTON LOCOMOTIVE WORKS.
480 HARRISON AVENUE.
HINKLEY & DRURY

THE HINKLEY & WILLIAMS WORKS,



552 Harrison Avenue, Boston,

MANUFACTURE

Locomotive Engines and Tenders,
BOILERS AND TANKS,

Gun Metal and Common Iron Castings, Brass and Composition Castings.

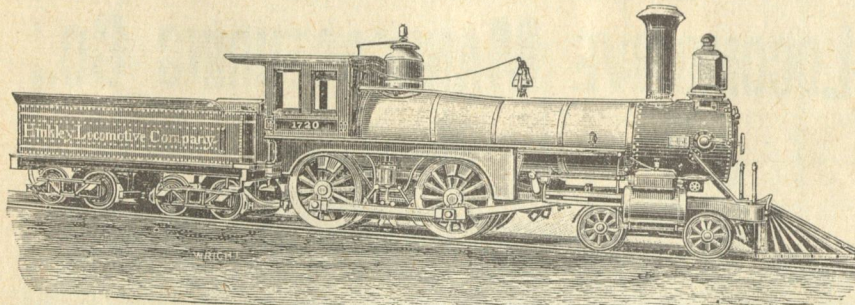
LOCOMOTIVES AND BOILERS REPAIRED.

Sole Manufacturers of "The Hinkley Patent Boiler," for Locomotive and Stationary Engines. All orders will be executed with despatch.

JARVIS WILLIAMS, Treasurer and General Manager.

1890

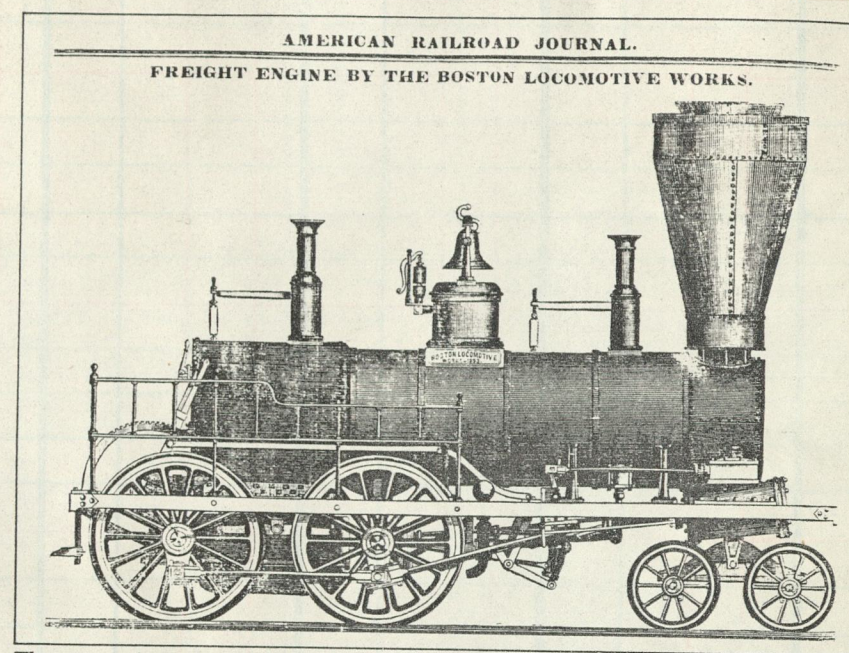
Hinkley Locomotive Co.



ESTABLISHED IN 1841.

OFFICE: - 439 Albany Street, Boston.

C. L. PEIRSON, Treasurer.



The engraving shown here appeared in the American Railroad Journal for October 8, 1853. Except for the link-motion valve gear, the engine shows no improvement over the machine illustrated on page 31.

HINKLEY LOCOMOTIVE COMPANY

LION, 10 TONS,

BOSTON, MASS.,

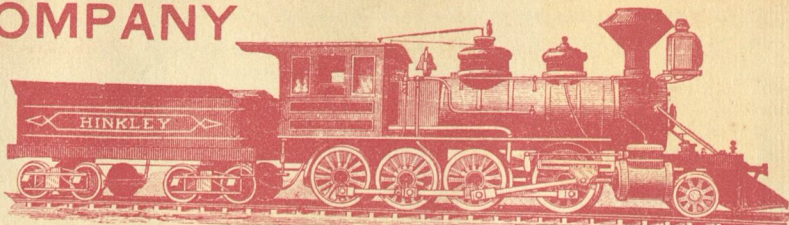
MANUFACTURERS OF

LOCOMOTIVE ENGINES

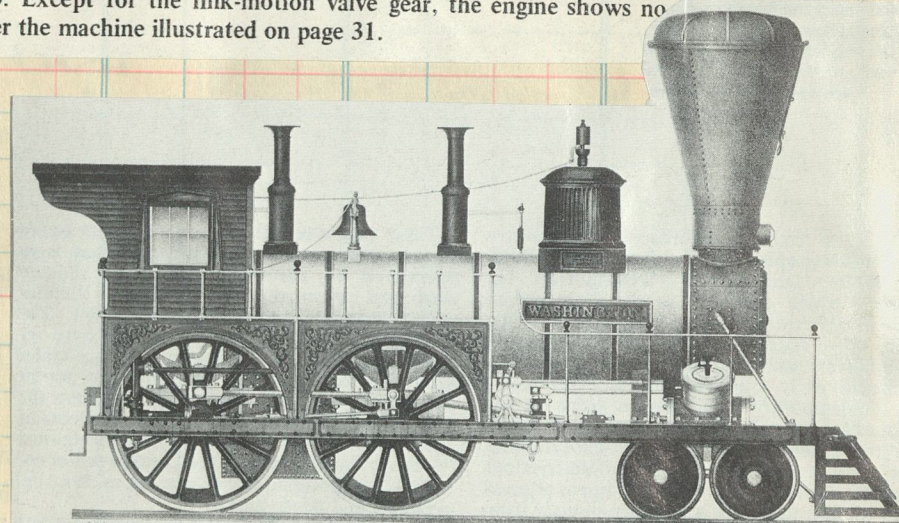
FOR ALL GAUGES.

Best workmanship and interchangeability of parts guaranteed.

GREELY S. CURTIS, Treas. FRANKLIN D. CHILD, Supt.



CONSOLIDATION, 52 TONS, HINKLEY LOCOMOTIVE COMPANY, 1882.



LOCOMOTIVE PASSENGER ENGINE. 1853
GLOBE WORKS BOSTON, JOHN SOUTHER & CO

Paterson, N. J.

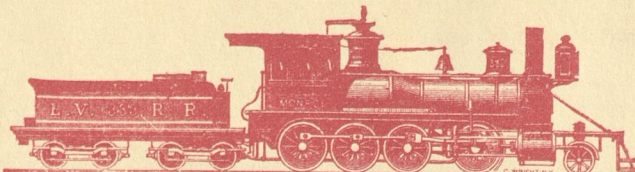
NEW YORK OFFICE:

No. 33 WALL ST.

GRANT LOCOMOTIVE WORKS.



GOLD MEDAL.



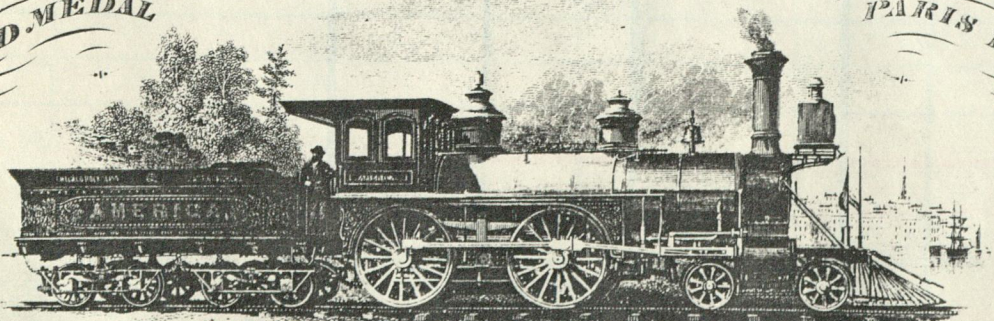
PARIS, 67.

Manufacturers of Locomotive Engines of all sizes adapted to every service. All parts are made to gauges and templates, and are warranted to be interchangeable on all Engines of the same class.

New York Office 43 Wall St.

GOLD MEDAL

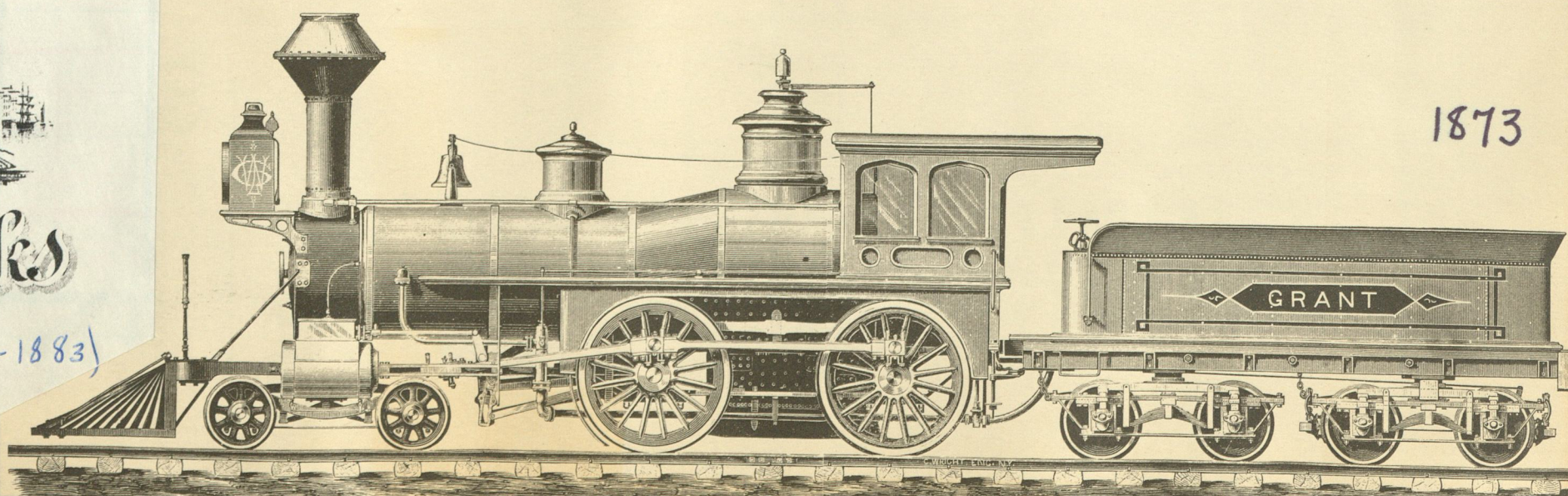
PARIS 1867.



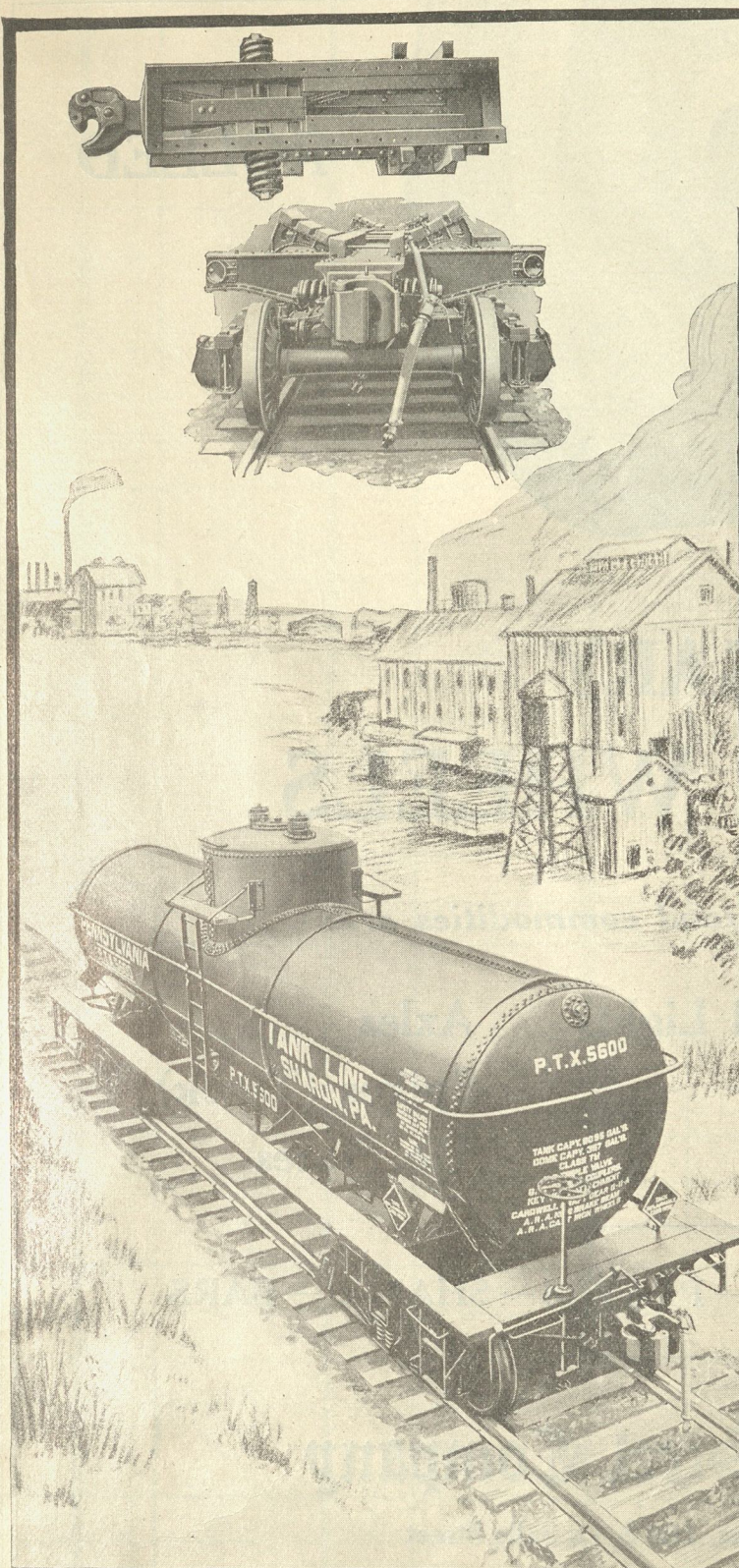
Grant Locomotive Works

Paterson, N. J. (1863-1883)

1873



PENNSYLVANIA TANK CARS



Two New Plants Can Now Supply "Pennsylvania" Construction

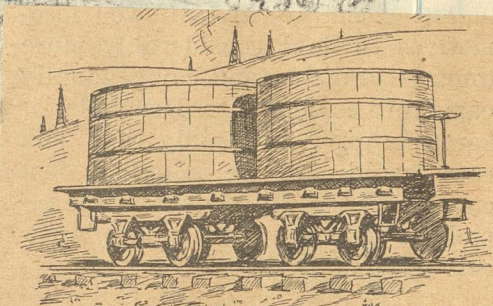
The "Pennsylvania" Type A-1 Center Sill, shown at the left top corner has withstood a higher pressure than any other sill in recent competitive tests—a maximum pressure of 1,479,000 lbs.

The end view of the "Pennsylvania" underframe and arch-bar trucks directly beneath it clearly shows the tank supports and the sturdy body bolster construction of the improved type A-1D "Pennsylvania" Tank Car.

In addition to Tank Car Work, our two large plants at Sharon and Kansas City are in position to handle railroad freight car construction—including building of new cars; repairing of used equipment; and the fabrication of steel underframes, center sills, and similar railroad work.

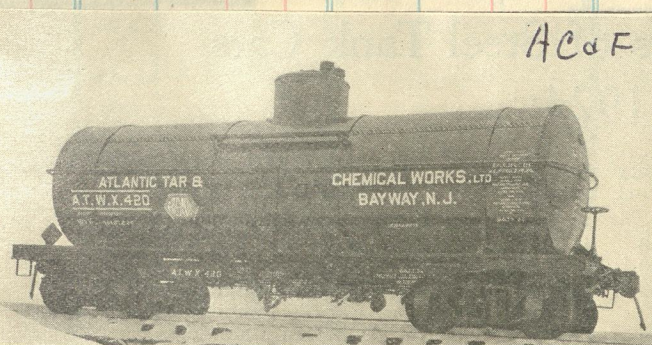
May we submit our quotation on your building and repair requirements for freight or tank cars? Write for details.

THE PENNSYLVANIA TANK CAR CO.
PENNSYLVANIA CAR COMPANY
PENNSYLVANIA TANK LINE
SHARON, PENNSYLVANIA
New York St. Louis
Kansas City Tulsa
Houston Denver Tampico
San Francisco



GRAND-DADDY of the modern tank car was invented in 1865

"Pennsylvania" Tank Cars are used by Leaders of Industry



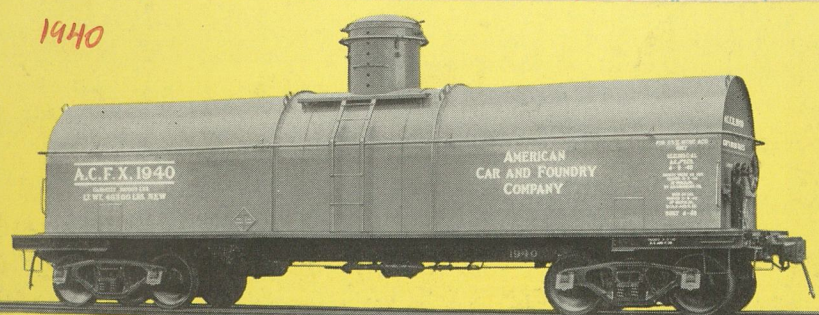
10,000-Gals. Capacity Tank Car.

1924



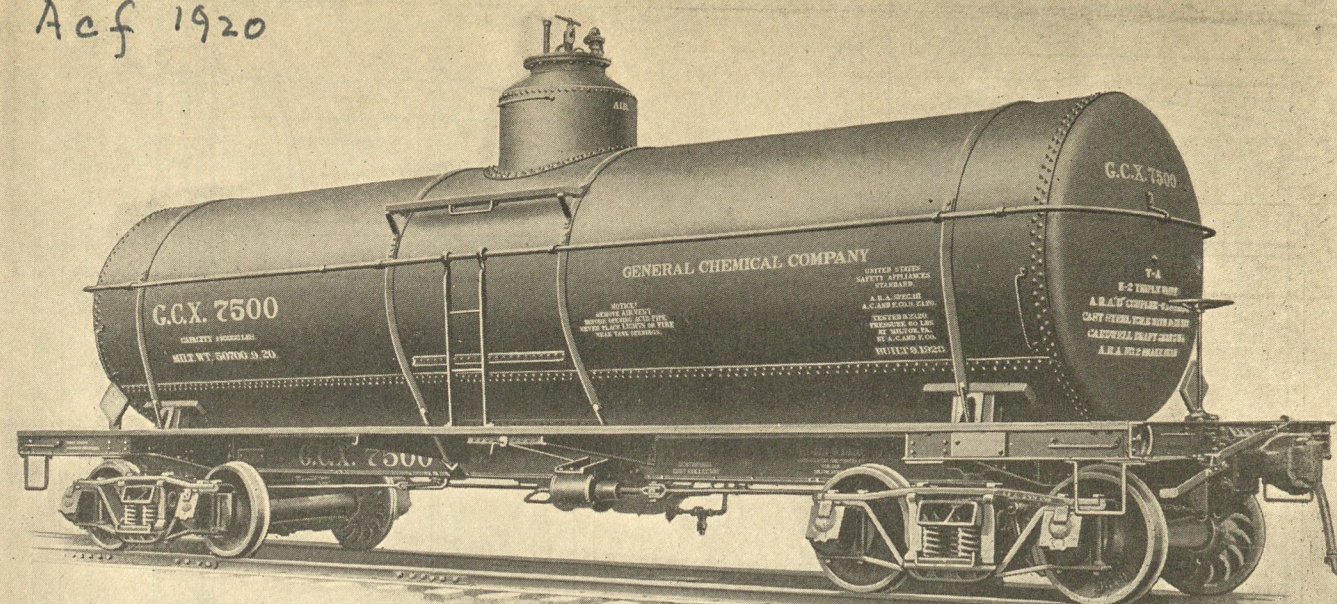
8,000-Gals. Capacity Tank Car.

1924



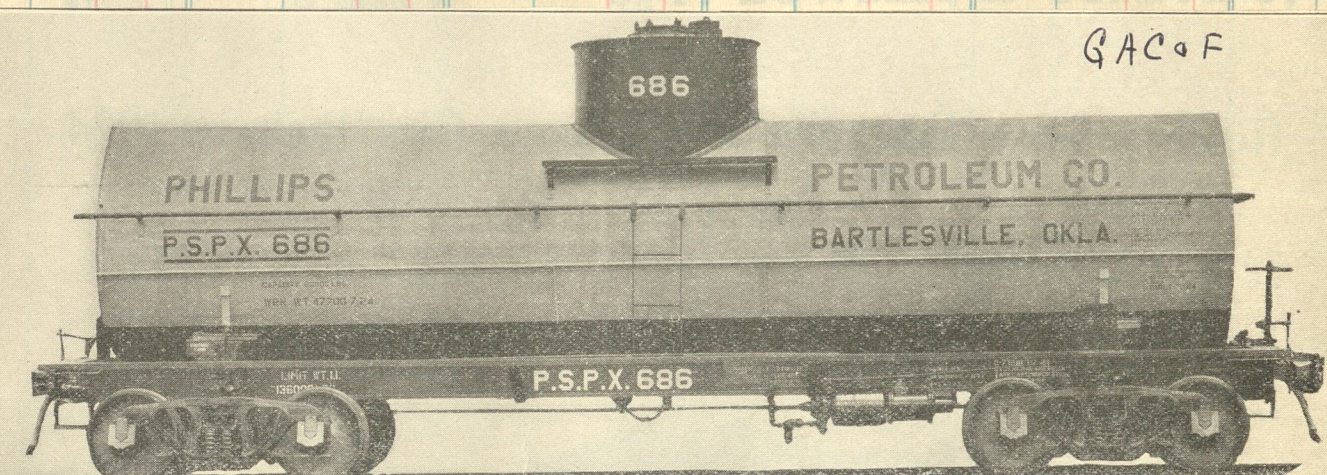
This new A.C.F. 8,000 gallon aluminum alloy tank car, of longitudinal course construction with triple riveted seams, is expressly designed to handle 95% nitric acid.

Acf 1920



1500-1549

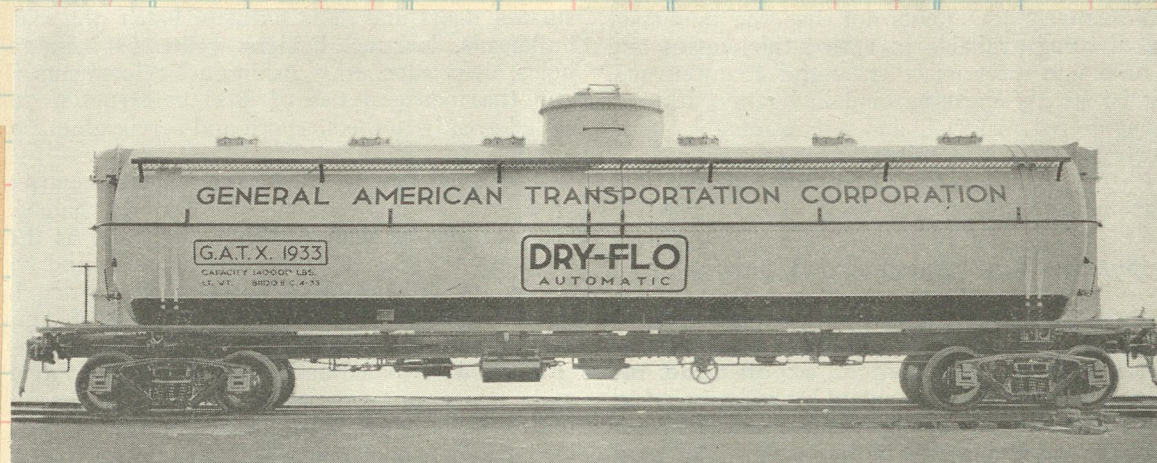
Sulphuric Acid Tank Cars of 70 Tons Capacity



611-1035

8,000-Gals. Capacity A. R. A. Class IV Tank Car.

1924

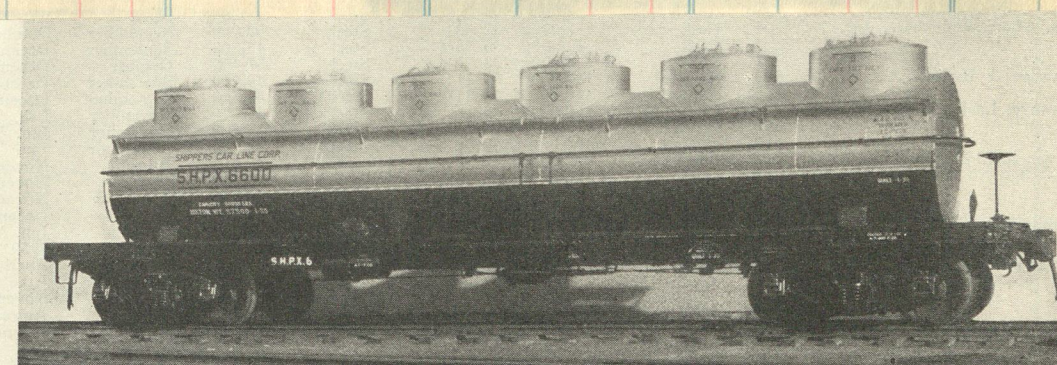


Dry Bulk Commodities are Unloaded Automatically from This Car without Dust

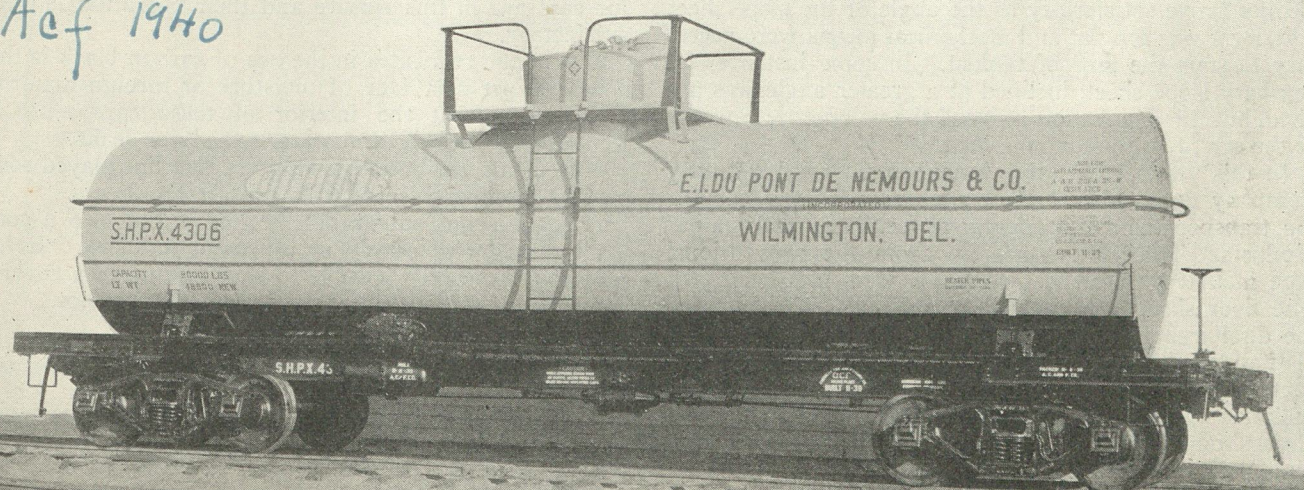
1933

Six-Compartment 6,000-Gallon Tank Car for Transporting Wine—Welded Tank, Lined with Lithcote. Builder, American Car and Foundry Company

1939



Acf 1940



A Tank Car Built for the Shipment of Nylon Salts in a 60-Per Cent Water Solution

Where Minutes Mean Dollars

"G A" Efficiency Counts



Standard coal hopper car of 55 tons capacity, adopted by U. S. Railroad Administration during the war. Many railroads now have thousands of these cars in active service. Specialties may be applied as desired.

To be a pace-maker in the race against time with quick loading and unloading devices has been the history of The General American Car Company.

Yearly its three plants turn out thousands of cars of all kinds, standardized types, or types specifically designed for some customer's special need, equipped with betterments which are exclusive.

Its engineers are ever adding labor and time saving features which increase the value of their product.

Car users are invited to submit their problems and requirements to our Free Consultation Bureau. It does not matter where the correspondents are located. Nor in what kind of cars they are interested. Just get in touch with the address below.

GENERAL AMERICAN CAR COMPANY

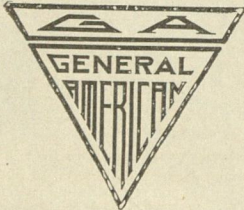
Subsidiary of The General American Tank Car Corporation

General Offices: Harris Trust Building, Chicago

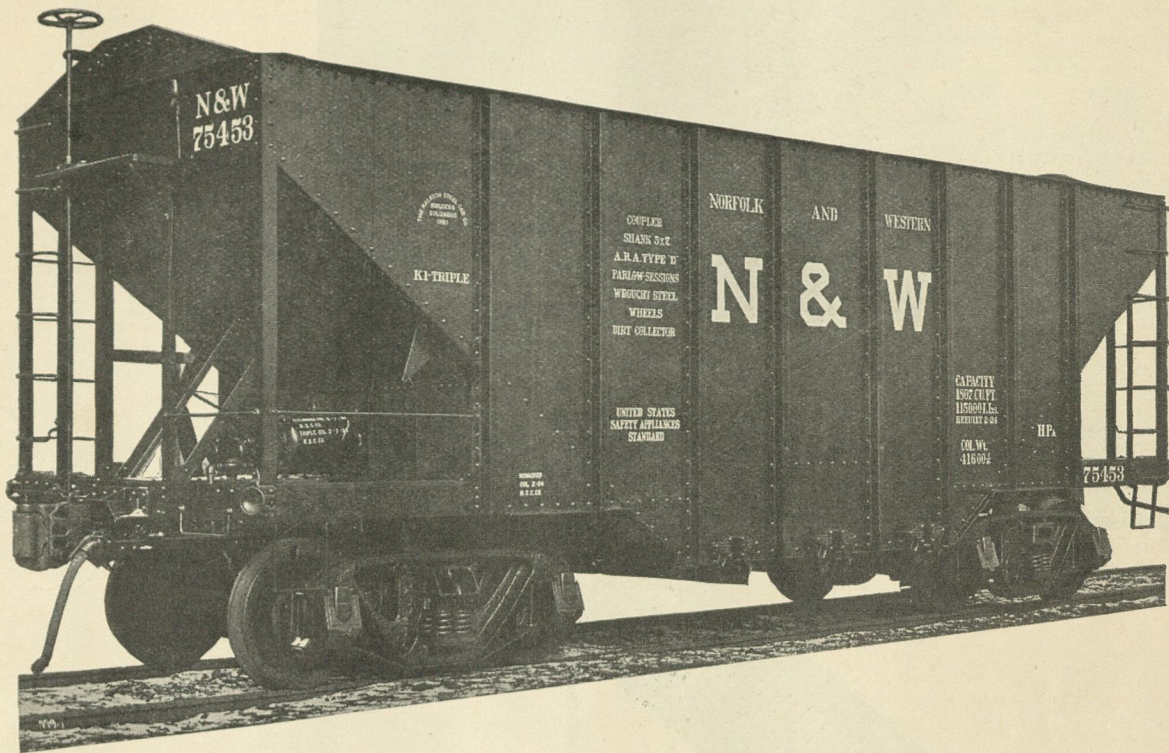
Plants at: East Chicago, Ind.; Sand Springs, Okla.; Warren, Ohio

Sales Offices: 17 Battery Place, New York;

24 California St., San Francisco



'RALSTON BUILT' CARS



'Ralston Built' cars are noted for their dependability—their strong construction and first class workmanship, which enables them to give a service devoid of frequent shop-pings for repairs. From the first bolt driven to the paint job, each operation is thoroughly inspected, insuring our customers of a better built car.

The Ralston Steel Car Company

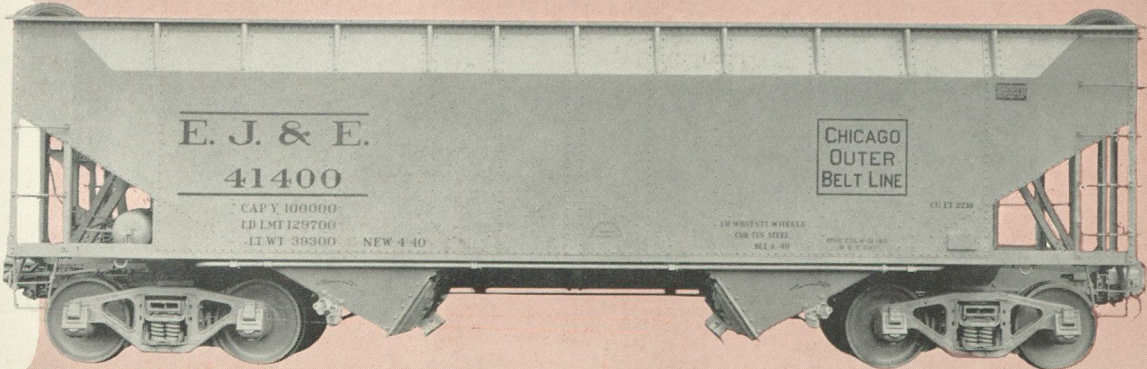
COLUMBUS, OHIO

BUILDERS OF STEEL AND COMPOSITE FREIGHT CARS

74000-11999

CAPACITY 100,000 lb. —
light weight 39,300 lb.

Built by the Ralston Steel Car Company. 300 of these cars have recently been put into operation. Cubic capacity is 2238 cu. ft. All rolled sections, except center sill, are of U. S. S. MAY-TEN; all plates and light bars of U. S. S. COR-TEN. High resistance to atmospheric corrosion and greater abrasion resistance are imparted by this construction and should materially increase the service life of the equipment.



1001-1400

BETHLEHEM 1920

TABLE II—ORDERS FOR FREIGHT CAR, SINCE 1901

Domestic Orders				
Year	Freight cars	Year	Freight cars	
1901	193,439	1908	62,669	
1902	195,248	1909	189,360	
1903	108,936	1910	141,024	
1904	136,561	1911	133,117	
1905	341,315	1912	234,758	
1906	310,315	1913	146,732	
1907	151,711	1914	80,264	
Domestic and Foreign				
Year	Domestic	Canadian	Export	Total
1915	109,792	18,222	128,014	
1916	170,054	35,314	205,368	
1917	79,367	53,191	132,558	
1918	114,113	9,657	123,770	
1919	22,062	3,837	25,899	
1920	84,207	12,406	96,613	
1921	23,346	30	23,376	
1922	180,154	746	180,900	
1923	94,471	8,685	103,156	
1924	143,728	1,867	145,595	
1925	92,816	642	93,458	

Prior to 1918, Canadian orders included in domestic.

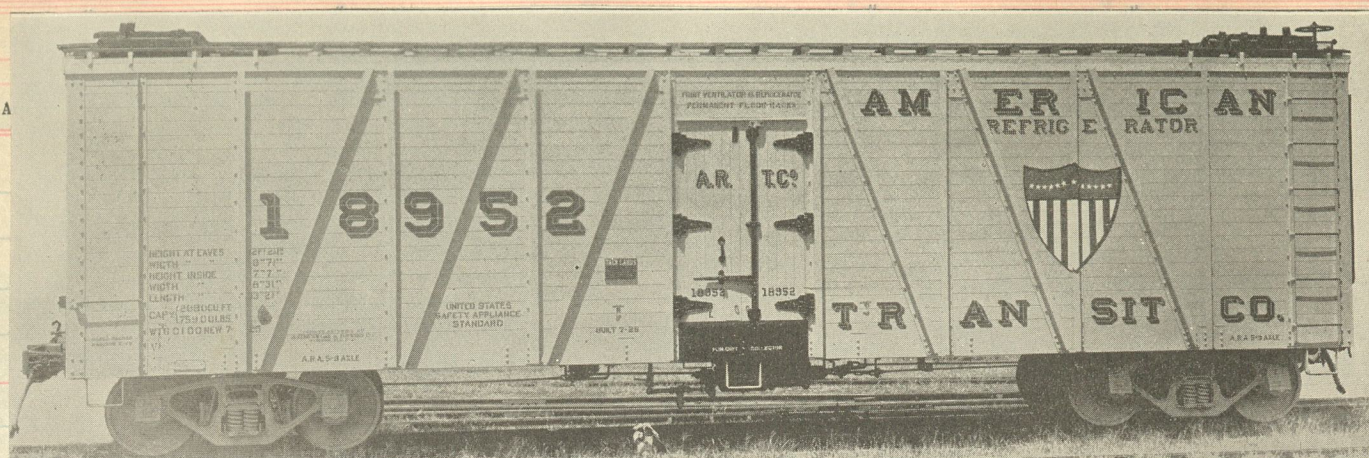
Generally speaking, any company other than an individual railroad company which owns railway cars for service on the railroads is known as a private car company. The ten private freight car companies owning the largest fleets of equipment as of April, 1940, are:

	Cars
Union Tank Car Co.	39,000
Pacific Fruit Express Co.	37,402
General American Transportation Corp.	17,620
Fruit Growers Express Co.	14,354
Merchants Despatch Transportation Corp.	13,409
Union Refrigerator Transit Lines	7,403
Western Fruit Express Co.	7,146
North American Car Corp.	7,000
Sinclair Refining Co.	6,490
Armour Car Lines	5,959

Pullman-Standard 1939



Clos. No. Sold A



17000-18954 40-Ton Steel Underframe Refrigerator Car Built by American Car & Foundry Co.

1925



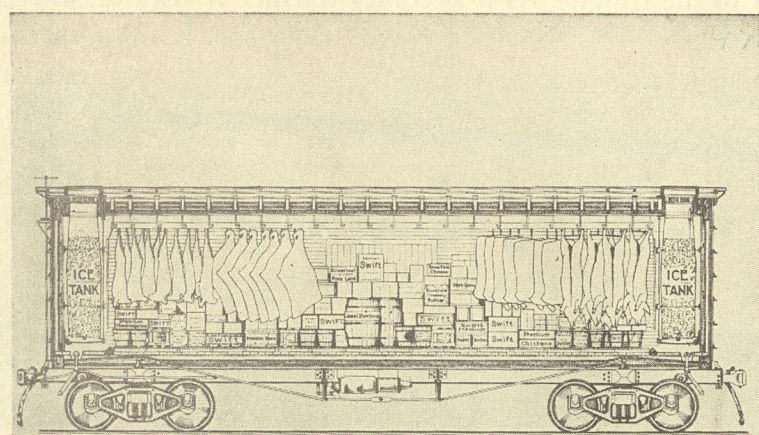
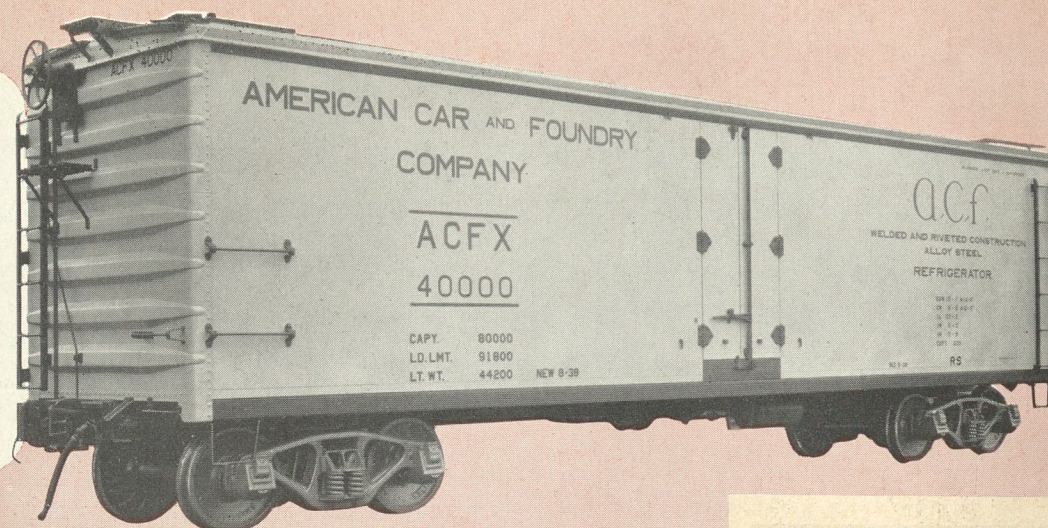
Plywood Refrigerator Car Built in 1940

Sold Amount

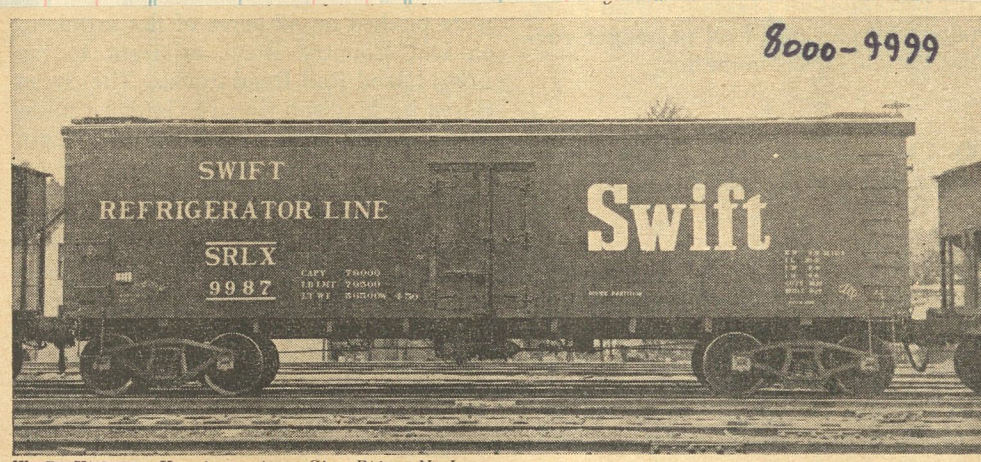


40-ton Refrigerator car, light weight 44,200 lb.

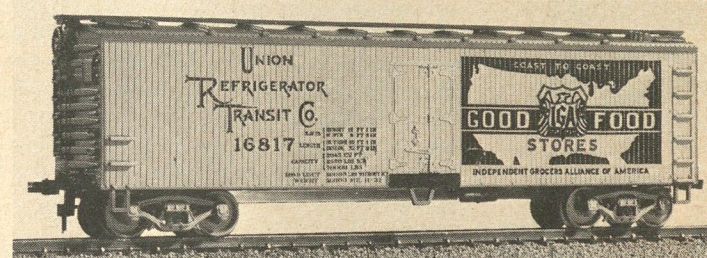
U-S-C COR-TEN used throughout the body except in center sills, the thickness of the plates and shapes being reduced to a minimum consistent with adequate strength and long life. This car is 8700 lb. lighter than a similar capacity riveted light-weight car built only 2 years previously. Embodies new economical methods of using dry ice in combination with water ice. Designed and built by American Car and Foundry Co.



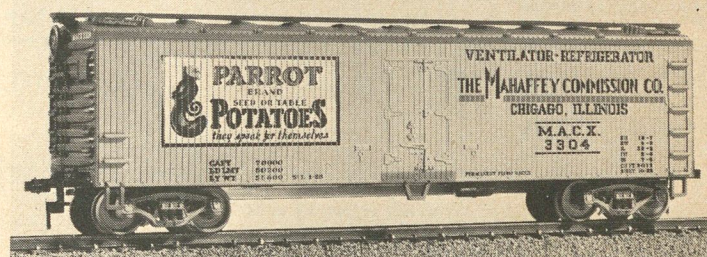
Interior of a Refrigerator Car Showing How Fresh Meat and Provisions Are Packed



W. R. Hicks, 25 Hawthorne Ave., Glen Ridge, N. J.



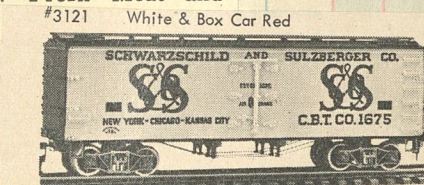
GOOD FOOD STORES



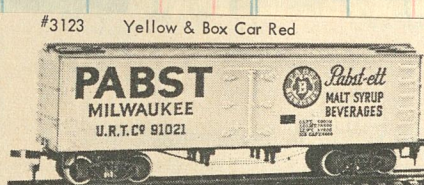
PARROT POTATOES



OUR MOTHER'S COCOA



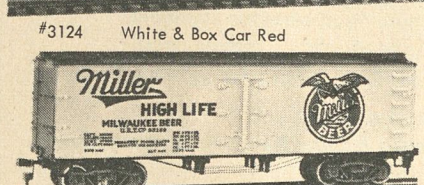
#3122 Green



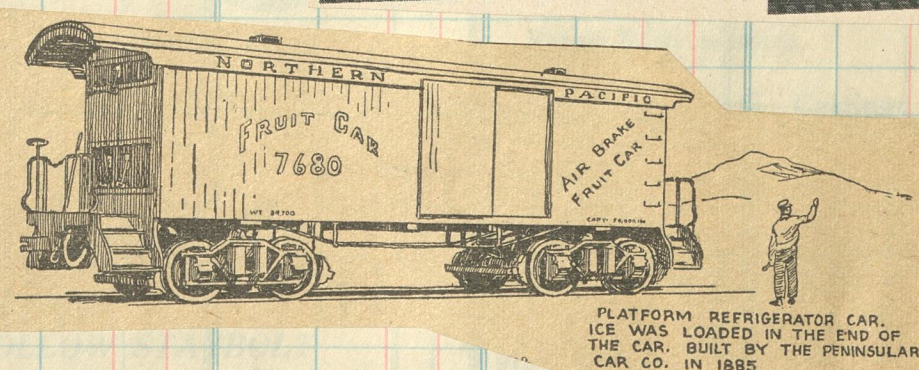
#3124 White & Box Car Red



#3125 Yellow & Box Car Red



#3126 Yellow & Box Car Red



PLATFORM REFRIGERATOR CAR. ICE WAS LOADED IN THE END OF THE CAR. BUILT BY THE PENINSULAR CAR CO. IN 1885

417. What was the origin of railway refrigerator service?

The first shipment of dressed beef under refrigeration was made from the Chicago Stock Yards to the East in 1857, in an ordinary box car fitted with bins of ice. The first rail shipments of fruit under refrigeration were made from southern Illinois to Chicago in 1866. Fresh strawberries packed in specially constructed iceboxes reached the Chicago market in excellent condition. The first patent for a refrigerator car was issued in 1867, and in 1872 southern Illinois was shipping strawberries and other fruits in the new type of car. In May, 1885, berries from the Norfolk (Virginia) area were shipped to New York under refrigeration. Florida oranges reached New York under refrigeration for the first time in October, 1888. In June, 1889, the first carload of deciduous fruits from California entered the New York market. From these beginnings, perishable freight and express shipments on the American railroads have grown to stupendous proportions. "Iceboxes on wheels" have given American fruit and vegetable growers, as well as poultrymen, dairymen, and meat packers, a nationwide market and have brought fresh fruits and vegetables, eggs, poultry, dairy products and packing-house products in great variety within the reach of every American home at all seasons of the year.

PRESSED STEEL CAR CO.

New York, Pittsburgh, Chicago, Washington, D. C. St. Paul

CARS

Of Every Description

Cars Repaired

Cast Iron Chilled Car Wheels

Repair Parts

Steel and Malleable Castings

MT. VERNON CAR MANUFACTURING CO.

Manufacturers of

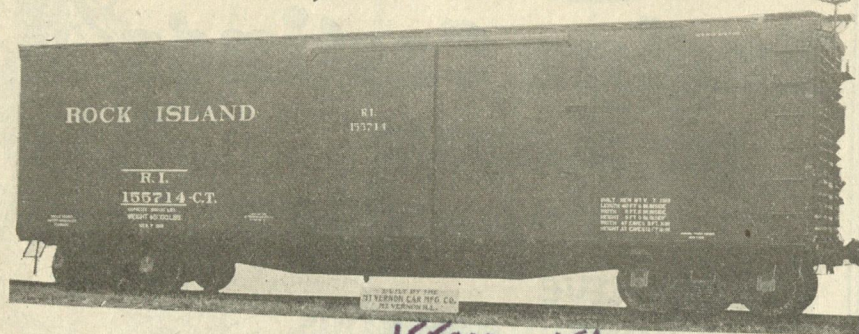
MT. VERNON, ILL.

FREIGHT CARS

of Every Description

STEEL AND WOOD

Car wheels, Forgings, Pressed Steel Shapes, Brake Beams, Carlines. Capacity: 10,000 Cars, 150,000 Wheels, 20,000 Tons Forgings, per annum.



156000 - 156999

FREIGHT CAR DOOR FIXTURES AND REPAIR PARTS
BOTTOM SUPPORTED :: :: TOP SUPPORTED
BURGLAR AND WEATHER-PROOFING DEVICES

CAMEL COMPANY

332 So. Michigan Ave.
CHICAGO, ILL.

STEEL CAR REPAIRS

STANDARD RAILWAY EQUIPMENT, STEEL UNDERFRAMES AND
PRESSED STEEL PARTS OF ALL DESCRIPTIONS

We Specialize in the REBUILDING and REPAIRING of Steel Freight Cars.

Quotations and Estimates Gladly Furnished Upon Request.

YOUNGSTOWN STEEL CAR CO.

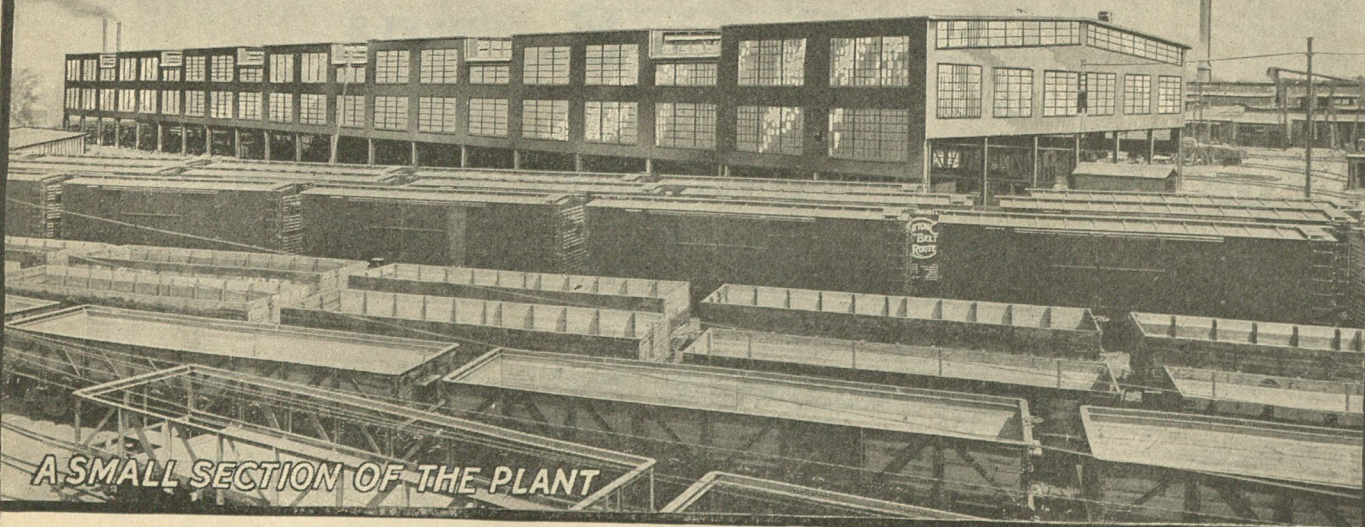
NEW YORK, 39 Cortlandt St.
PITTSBURGH, 1st Nat'l Bank Bldg.

Works and General Offices: Youngstown, Ohio.

SALES OFFICES
RICHMOND, VA., Mutual Bldg.

DETROIT, Dime Bank Bldg.
SAN FRANCISCO, 461 Market St.

THE MOUNT VERNON CAR MFG. COMPANY OF MOUNT VERNON, ILLINOIS.



A SMALL SECTION OF THE PLANT

A NEW DEPARTURE

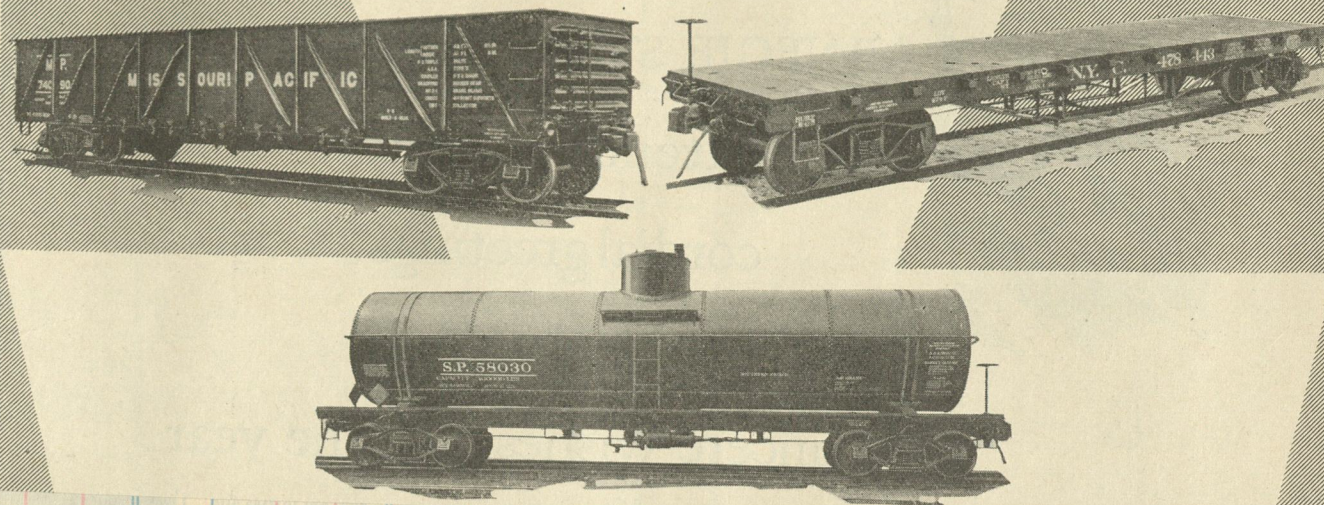
A fully equipped Car Repair Shop.

Each aisle supplied with a double 10-ton Crane.
Electric and oil heating furnaces, air compressors, etc.

Let us do some of your work.

1923

PENNSYLVANIA



April 30, 1920

RAILWAY AGE

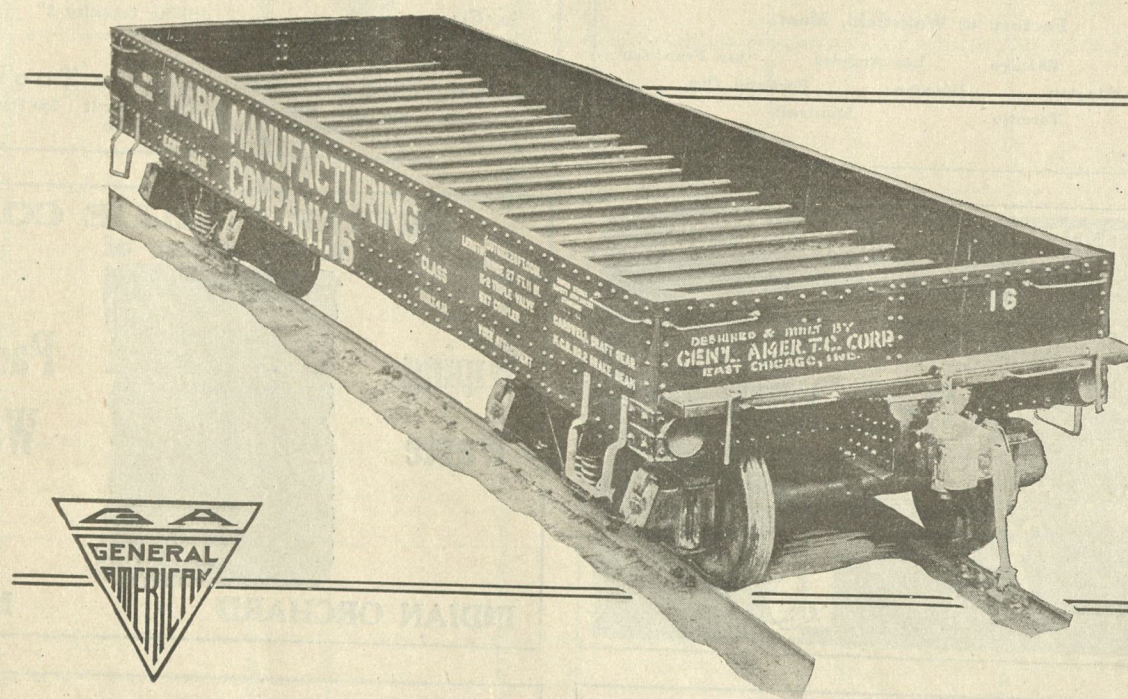
37

Car Equipment of All Kinds

Standard

Specialty

Industrial



Time and time again great corporations have placed before our engineers difficult problems in car construction. These questions arose as industry advanced and demanded more rapid quantity transportation of various commodities.

That they were solved satisfactorily is evidenced by the tens of thousands of "G A" cars used by American railroads and manufacturers everywhere.

We build steel or composite cars to any specifications. Above is an

all-steel industrial car for carrying steel ingots. The deck is covered with eight-inch steel rails on which the white-hot ingots are stacked. This is only one of many such specialized types of car construction produced by our three plants.

The accumulated experience and scientific knowledge of General American engineers is at the service of car users everywhere through our free consultation department. Write and tell us your requirements.

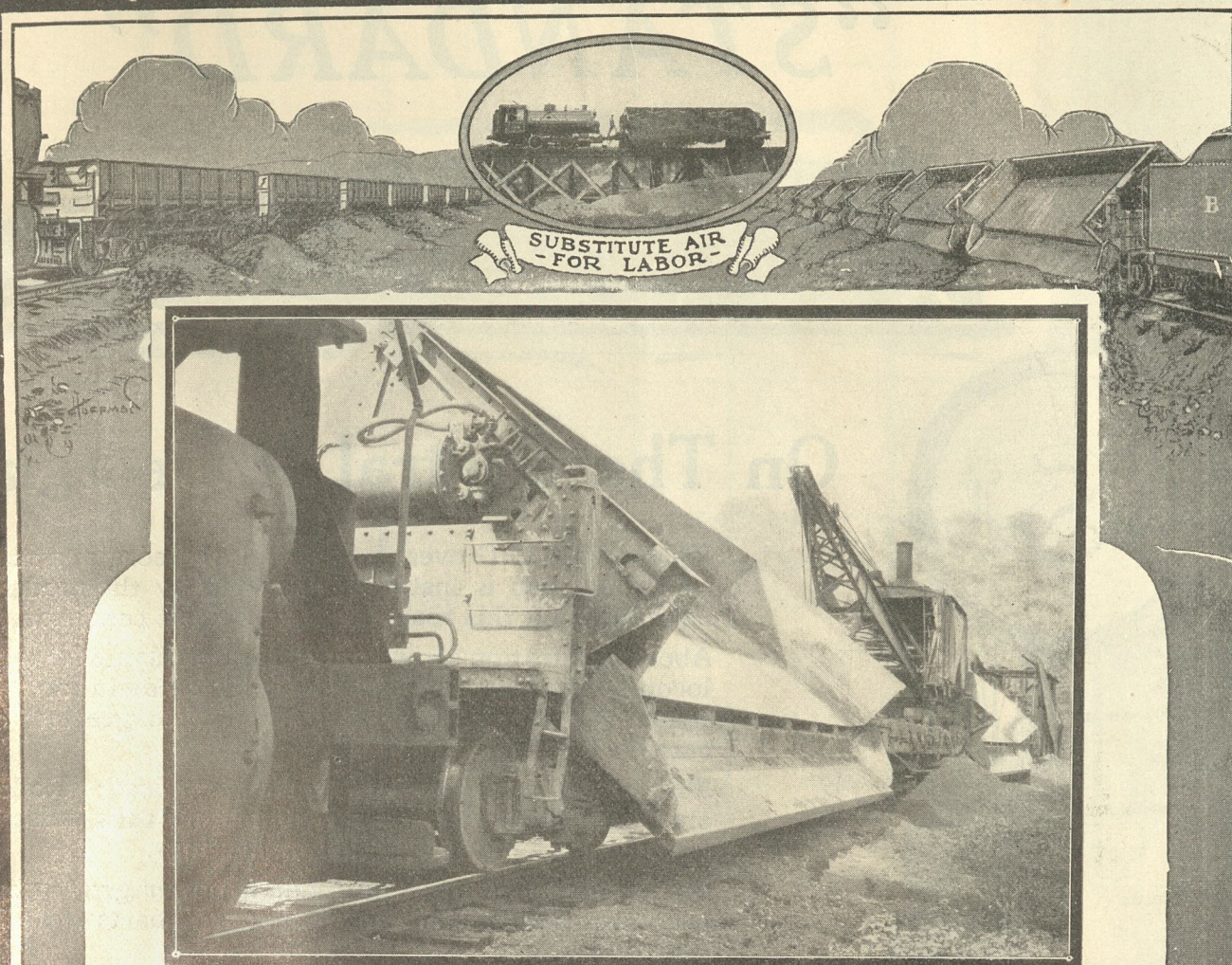
GENERAL AMERICAN CAR COMPANY

Subsidiary of The General American Tank Car Corporation

General Offices: Harris Trust Bldg., Chicago, U.S. A.

Plants at: East Chicago, Ind.; Sand Springs, Okla.; Warren, Ohio
Sales Offices: 17 Battery Place, N.Y.; 24 California St., San Francisco

Clos. No.



Equip Your Work Trains With Extension Side Dump Cars

THE down turning door of the Extension Side Dump Car permits the instantaneous dumping of any kind of a load from fine sand to the largest boulder. This feature is vitally important in work train service, especially when it is necessary to carry on heavy operations upon the right-of-way and dumping completed between train time.

You can depend always upon the quick action of these cars. The movement of the body to full dumped position is a positive rolling motion without excessive shock. As the car body tips, the side goes out and down and the load is sure to go. There is absolutely no danger of materials wedging, causing delays in releasing the cars.

The Extension Side Dump Car has a proved record of success in cinder service, ditcher service, bank widening, rip-rapping, bridge filling and general construction work.

CLARK CAR COMPANY

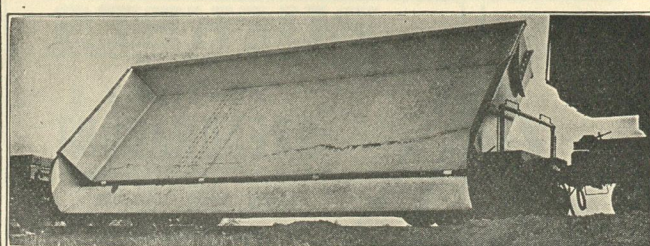
PITTSBURGH, PA.
NEW YORK 52 Vanderbilt Ave. Chicago 122 S. Michigan Ave. San Francisco Rialto Building

Extension Side Dump Cars

— Air Operated —



Fig. 96—Milk Car Built for the Boston & Maine by the Laconia Car Company. Capacity 50,000 lb., Light Weight 80,500 lb., Length Over End Sills 51 ft.

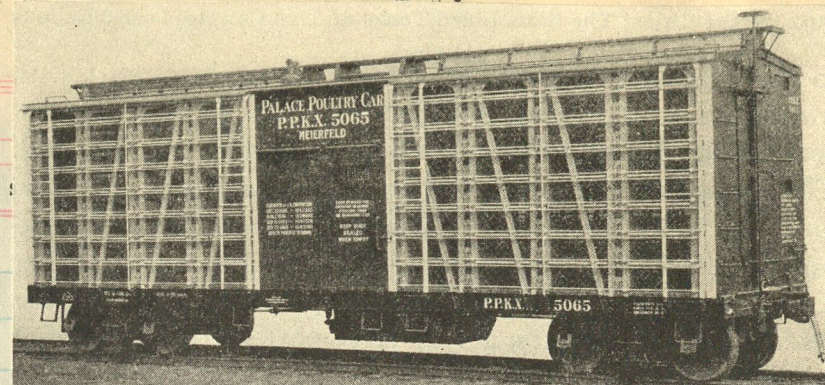


DIFFERENTIAL DOUBLE FULCRUM AIR DUMP CARS

Body is supported on four points directly over the bolster side bearings instead of being pivoted along center line. This method of support gives: low height, stability, freedom from locking mechanism, safety, quick dumping without shock, and an extreme distance load is deposited from track.

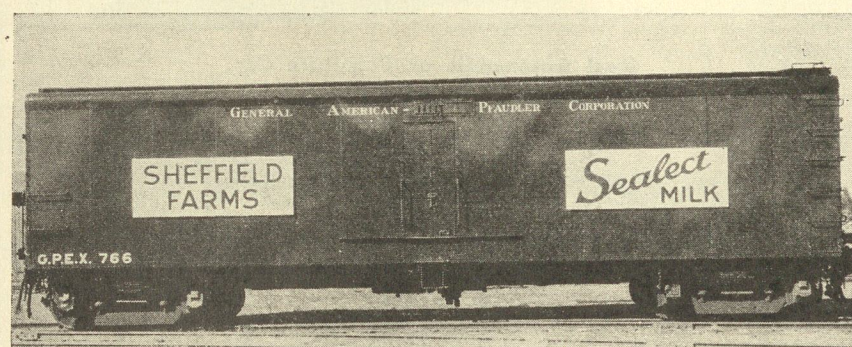
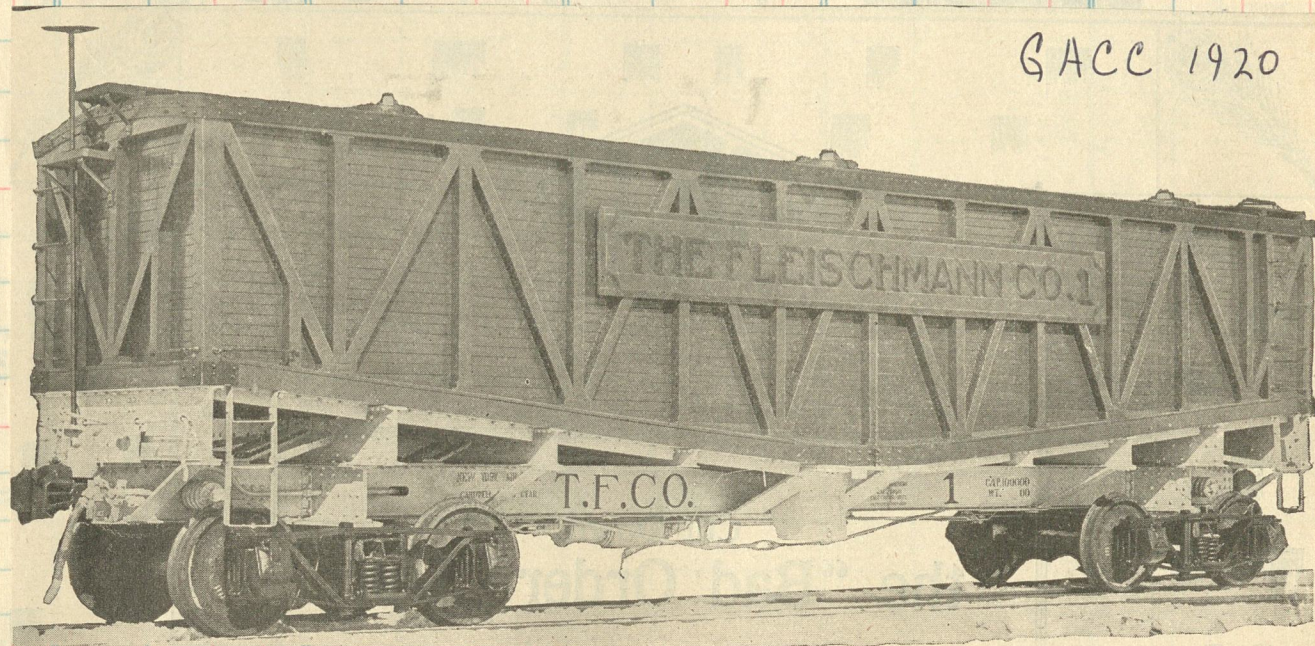
Complete Description in our Catalog D-15. 1926

THE DIFFERENTIAL STEEL CAR CO. Findlay, Ohio



29

Amount

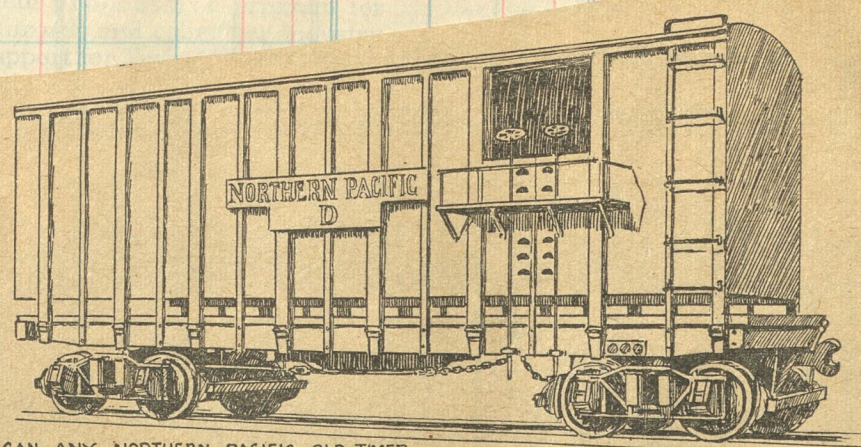


Order 4000 Gals

COMMEMORATIVE: To help the twin cities of Neenah and Menasha, Wis., to celebrate their centennials in 1974, Menasha Corporation (observing its 125th year) obtained a single-sheath box car for display from the Soo Line. Soo forces at Fond du Lac added sheathing and painted the car as predecessor-firm Menasha Wooden Ware's cars once were painted.



Larry Easton.



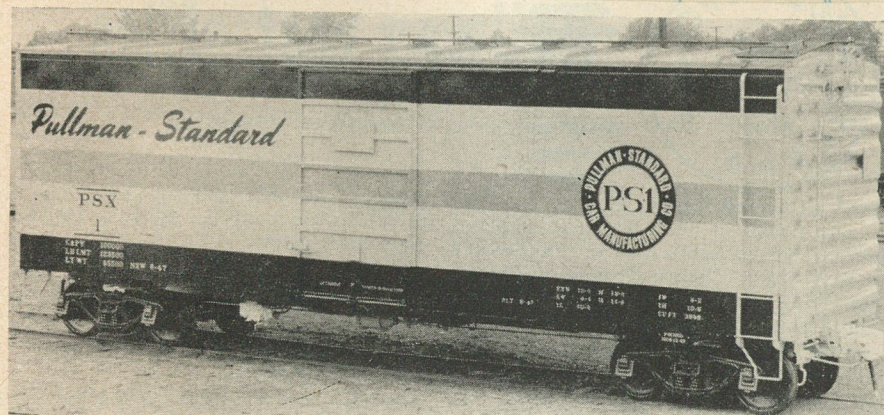
CAN ANY NORTHERN PACIFIC OLD-TIMER SUPPLY INFORMATION ABOUT THIS RARE TYPE OF CAR, BUILT BY PENINSULAR CAR CO. IN 1895?

Designed to exceed all A.A.R. strength requirements yet weighs 4½ tons less

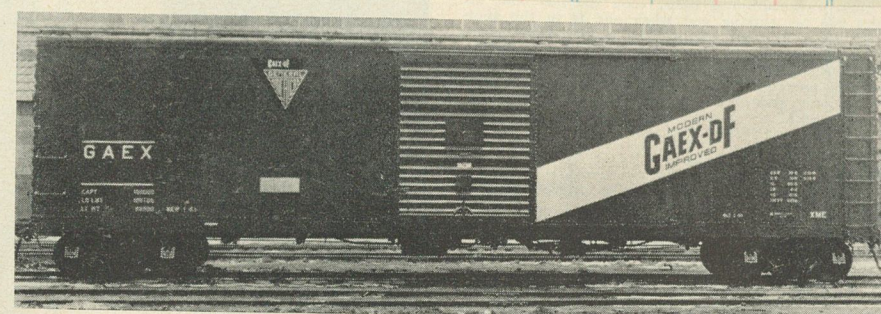
In this all-fusion welded 50-ton box car, every seam is continuously welded by automatic machine method. Designed and built by General American Transportation Corporation, roofs, sides, ends, doors and underframe, with exception of center sill, are of Cor-Ten. Car weighs 36,800 lb., or 8,500 lb. less than the A.A.R. standard car. An unusually flexible modern design readily adaptable to varying requirements.



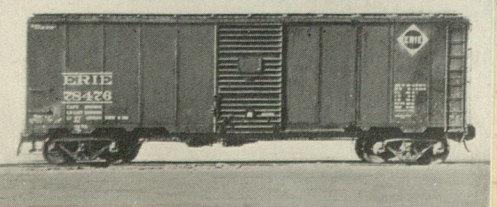
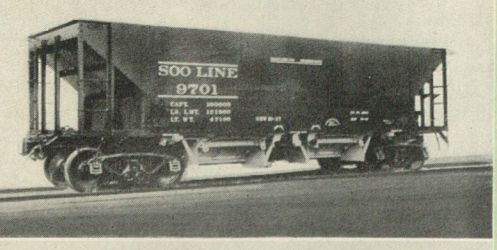
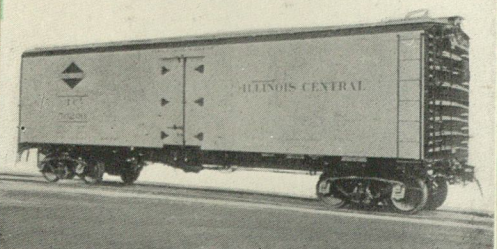
PRESSED STEEL CAR COMPANY, which built the first all-steel hopper and box cars, did an about-face in 1950 by producing Unicel, a combination box-refrigerator car made of laminated wood. Instead of a steel center sill (which Unicel does not have) to absorb the stress of train operation, the entire body is employed to do it. Unicel was proposed as the answer to the steel shortage which has killed the railroad's goal of 10,000 new cars a year. Several were sold to Arabia; Atlantic Coast Line ordered two for tests. Since then A.A.R. has temporarily rejected the car for interchange because carriers have practically no wood-working machinery and hence no repair facilities. Unicel's future is therefore indefinite.



PULLMAN-STANDARD, biggest of all American car builders, cracked the railroads' own expensive habit of buying custom-designed cars by producing a 50-ton "package" box car, a largely welded unit built for stock on special mass-production lines in its Michigan City (Ind.) and Bessemer (Ala.) plants and sold on a first come, first served basis. The PS-1 (above) was placed in full production in June 1947, and as of April 1, 1952, a total of 41,415 had been shipped; up to 3000 have been ordered at one time. Lehigh Valley got the original PS-1, its No. 62000, in an order for 400. The Compartmentizer Car (left) is a modification of the PS-1 designed to reduce lading damage claims; within, it has two adjustable steel gates which seal off interior into compartments and prevent shifting of load. PS estimates that 20 such cars now have over 500,000 service miles accumulated without a damage claim.



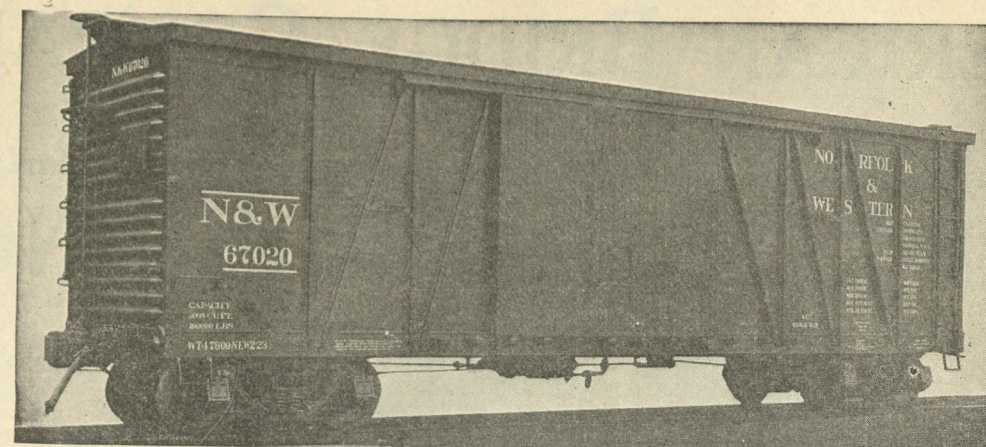
GENERAL AMERICAN-EVANS recently received a Federation for Railway Progress award for the development of its GAEX-DF ("damage-free") car. The unit was engineered to do the double job of eliminating damage claims on merchandise and recovering such traffic lost to trucks. At present approximately 360 DF cars are in the service of 12 railroads on a rental basis. Each is equipped with adjustable braces (to protect lading from shock in transit), reinforced steel floors, Chrysler-design trucks, eight-foot-wide doors, and Duryea underframes. Figures based on a year's operation indicate DF cars can double the average daily freight car mileage.



1000 automobile cars save 4½ tons weight each
Built by the Chicago, Milwaukee, St. Paul and Pacific, these Cor-Ten cars with a capacity of 100,000 lb. and an inside length of 50'6" have light weight of 47,400 lb., approximately 9000 lb. less than other cars of similar type and capacity previously built. By a liberal use of spot-welding for sides and arc-welding for underframes, these parts were assembled as complete units, simplifying shop operations.



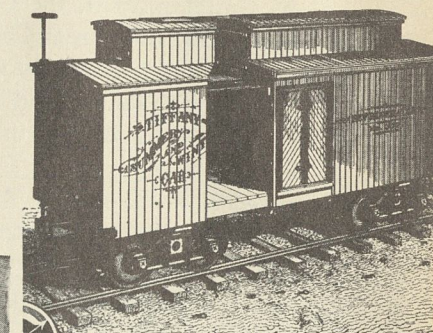
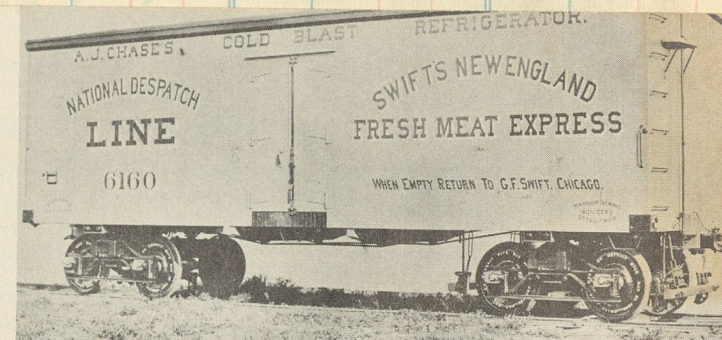
1936



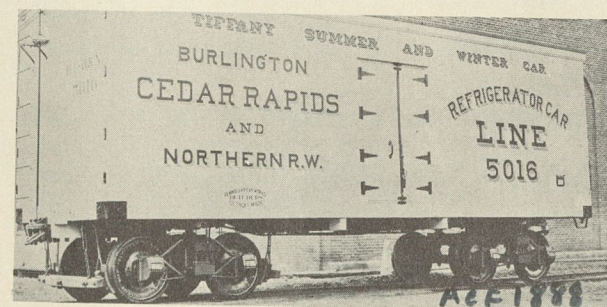
Builders of Steel and Composite Freight Cars. Manufacturers of Pressed Steel Repair Parts and Forgings. Specialists in Repairing and Rebuilding Railroad Freight Cars.

The Ralston Steel Car Company
COLUMBUS, OHIO 67000-67999

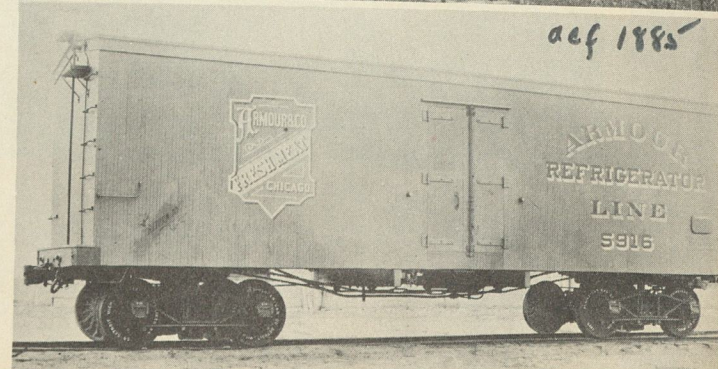
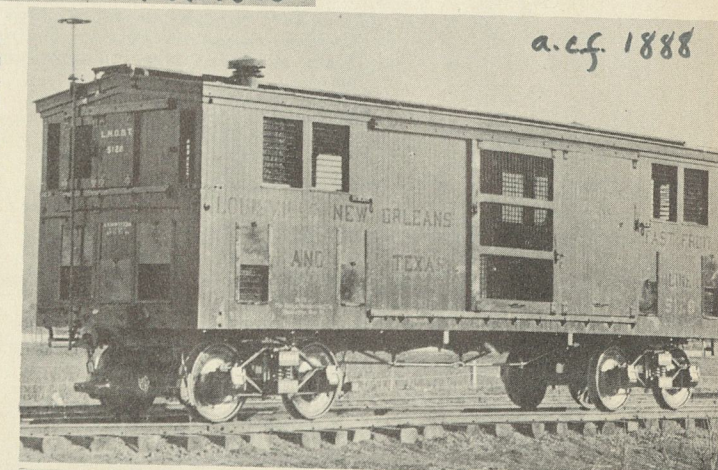
Although many types of refrigerator cars were patented and built during the decade after the Civil War, Gustavus Swift, the Chicago meat packer, was the first to use them with real success. In 1887 he had 10 cars built to a new design by A. J. Chase, a Boston engineer, and started shipping dressed beef to New England in them. His first cars looked much like the earlier Tiffany car in the drawing at the right. (Swift & Co.). But by 1880, when Swift had overcome the Easterners' prejudice against beef that wasn't butchered locally, his cars looked like the one above, and it wasn't long before all the midwestern packers were operating fleets of similar "freezers." Some were not packer-operated - Tiffany's white "Summer and Winter Cars," assigned to various railroads, some narrow-gauge, operated well into the 1890's. The car below was built in 1888; the BCR&NW, to which it was assigned, is now part of the Rock Island. (American Car & Foundry Co. photos)



Many Southern railroads still carry certain fruit, such as watermelon, in ventilated box-cars instead of refrigerators. The Atwater-patent ventilated car below was built in 1888. (American Car & Foundry Co. photo)



Until the late 1890's, when the Santa Fe began building its own "reefers," most California fruit was carried in packers' refrigerators, most of it in those of the Armour Refrigerator Line (below, right). This car was built in 1885. (American Car & Foundry Co. photo)



Freight Cars

THE IMMENSE VOLUME OF COMMERCE in the United States and the long railroad hauls required to transport many of the materials used has made it necessary to provide rolling stock capable of handling freight in large quantities. To meet this demand with the least possible amount of non-revenue load—weight of equipment—freight cars built for use on American railroads have been increased greatly in size and capacity in the last two decades; cars ranging upward to 120 tons each in capacity have been built. This increase in size has required careful design and construction in order to provide ample strength to withstand the severe service but with the use of only a minimum amount of material.

The increased cubical capacity has necessitated cars of greater length since railway line clearances place a limitation on the height and width and this in turn necessitates a greater distance between truck centers which, together with the severe stresses encountered in the operation of the heavy trains, renders the design of car underframes a matter of vital importance. The use of all-steel underframes has become universal for practically all classes of freight cars, particularly for those cars intended for handling heavy materials, such as coal and iron, or ores in bulk; in many cases the body framing also and frequently the entire car is constructed of steel. The use of wood has practically been abolished in car truck construction and the use of cast steel, pressed and forged steel, or rolled steel parts has become general.

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For "Railway Service Cars," "Foreign Cars" and "Industrial Cars" see separate chapters.

264,000 were privately owned; about 2,618,000 were operated by the railroads in revenue service—transporting revenue producing freight; the remainder consisted of caboose cars for freight train service and various other types of cars, such as ballast cars and other equipment used by the Maintenance of Way Department. These cars are divided into several general classes or groups: box and other closed top cars; open-top cars; other revenue cars; and non-revenue cars. The total number of cars in each group is found in the table.

To easily identify these various classes and types of cars and to briefly indicate their use, the American Railway Association, in 1910, adopted the following classification as recommended practice.

Classification of Freight Cars

CLASS "F."—FLAT

"FM"—Ordinary flat car for general service. This car has flooring laid over sills and without sides or ends.
 "FG"—Flat or gun truck car for special transportation of heavy ordnance.
 "FW"—Flat well-hole car for special transportation of plate glass, etc. This car is a flat car with hole in middle to enable lading to be dropped down on account of clearance limits.
 "FB"—Flat car having skeleton superstructure, suitable for carrying barrels, known as "Barrel Rack Car."
 "FL"—Flat logging car or logging truck. This is either an ordinary flat car, or car consisting of two trucks fitted with cross supports over truck bolsters; the trucks connected by a skeleton of flexible frame and logs loaded lengthwise on cross supports.
 "FT"—Flat car. A car equipped with holders for the transportation of illuminating gas.

CLASS "G."—GONDOLA

"GA"—Gondola Car. This car has sides and ends; open at top, and drop bottom; suitable for general coal or ore trade, stones or general trade.
 "GE"—Gondola car having drop bottoms and drop ends; suitable for general coal or ore or mill trade.
 "GC"—Gondola Coke Car. Gondola car fitted with coke racks and having drop bottoms.
 "GD"—Gondola Car. A car open on top, having side dump arrangement, and having sufficient strength and cubic capacity to carry its marked capacity of bituminous coal.
 "GM"—Gondola Car. A car open on top, with solid bottoms, low sides and drop ends, to facilitate twin shipments, suitable for mill trade, but not having sufficient strength or cubic capacity to carry its marked capacity of bituminous coal.
 "GB"—Gondola Car. A car open on top, with solid bottom,

1925

Type of Car	Railroad Owned	Privately Owned	Total
Box, plain	1,029,152	511	1,029,663
Box, automobile	120,662	10	120,672
Box, furniture	7,552	65	7,617
Box, ventilator	60,829	.....	60,829
Box, heater	1,250	.....	1,250
Box, insulated	4,692	120	4,812
Stock	96,020	1,463	97,483
Poultry	28	2,299	2,327
Flat	136,107	1,354	137,461
Refrigerator	54,651	92,174	146,825
Gondola	567,137	6,043	573,180
Hopper	484,048	24,384	518,432
Coke	15,232	623	15,855
Ballast, revenue	10,783	.....	10,783
Tank	14,608	134,029	148,637
Other revenue cars	5,188	806	5,994
Ballast, non-revenue	24,525	.....	24,525
Other non-revenue cars	107,616	.....	107,616
Caboose	34,012	.....	34,012
	2,784,042	263,881	3,047,923

In 1924 there were more than 3,000,000 freight equipment cars on the railroads of the United States. Of these about

sides and ends, suitable for mill trade, but not having either sufficient strength or cubic capacity to carry its marked capacity of bituminous coal.

"GK"—Gondola Car. A car open on top, with solid bottom, sides and ends, suitable for mill trade and having sufficient strength and cubic capacity to carry its marked capacity of bituminous coal.

"GF"—Gondola Car. A car equipped with coke racks and having solid bottoms.

"G-S"—Gondola Car. A car with fixed sides and ends, and flat bottom composed of dump doors hung at inside edge, and dumping to the side of track.

"GT"—Gondola Car. A car open on top, with high sides, solid bottom, sides and ends, suitable for unloading coal on dumping machines, but not suitable for mill trade.

CLASS "H."—HOPPER

"HM"—Hopper Car. Similar in general design to gondola car, having sides and bottom ends and open at top, equipped with hopper bottom and self-cleaning.

"HT"—Hopper (Twin). Similar to ordinary hopper, only equipped with two or more hopper doors instead of one.

"HD"—Hopper car equipped with side-dump hoppers.

"HC"—Hopper car equipped with coke racks.

CLASS "N."—CABOOSE

"NM"—Freight train service caboose for convenience of trainmen. This caboose is mounted on four wheels and has lookout at top over roof. It is fitted with bunks or benches and a stove for cooking and heating purposes, also tank for storage of drinking and washing water, and small tool storage boxes.

"NE"—Caboose mounted on eight wheels and longer than four-wheel caboose, but of the same general design.

CLASS "R."—REFRIGERATOR

"RA"—Meat and Provision Refrigerator. A car with body doors and hatch plugs equipped with insulation and brine ice tanks and without ventilating devices.

"RB"—Beer and Ice Refrigerator. A car with body and doors equipped with insulation, having no ice tanks or ventilating devices.

"RM"—Refrigerator or Produce Car. A car suitable for carrying commodities that need icing in transit. This car is equipped with two or more ice bunkers or baskets and suitable means for draining off melted ice or briny water. This car has body, door and hatch plugs equipped with insulation, with trap door in the roof for admission of ice and salt; also water seals inside of car.

"RS"—Standard Refrigerator. A car with body, doors and hatch plugs equipped with insulation, with ice tanks and either with or without ventilating devices.

CLASS "S."—STOCK

"SM"—Stock Car. This car is for transportation of stock on the hoof, and is equipped with roof, slatted sides and side doors, and single deck. With or without feed and water troughs.

"SD"—Stock Car. Composite having drop doors in floor and means of housing in sides and making drop-bottom box car.

"SP"—Stock Car. Used in poultry trade, fitted with roof and sides usually of wire netting, fitted with shelves for storing crates of poultry and leaving space for poultrymen, feed bag and watering facilities.

"SC"—Stock Car. This car is for transportation of stock on the hoof, and is equipped with roof, slatted sides and side doors, and convertible single or double deck. With or without feed and water troughs.

"SF"—Stock Car. This car is for transportation of stock on the hoof, and is equipped with roof, slatted sides and side doors, and fixed double deck. With or without feed and water troughs.

CLASS "T."—TANK

"TM"—Tank car for general service. This car is for general oil or liquid service, and consists of a steel tank mounted on frame or mounted directly on cradles over truck bolsters. It is equipped with one or two safety release valves, and is emptied by valves or valve at bottom. At the top is a dome, with or without manhole, and openings through which the tank may be filled.

"TA"—Acid Tank. Of same general construction as oil tanks.

"TL"—Acid Tank. Of same general construction as oil tanks, but having lead lining.

"TG"—Tank car having glass or glass-lined tanks, for use in hauling mineral waters and other special products.

"TS"—Tanks for special commercial service.

"TW"—Tank car having wooden tank instead of steel and used for water, pickles, etc.

"TMI"—Tank car built under the specifications for Class IV Tank Cars and insulated for handling casing-head gasoline, etc.

CLASS "V."—VENTILATOR

"VA"—Vegetable Ventilator. A car equipped with insulation, but having common box car end and side doors which afford no protection against heat or cold.

"VS"—Standard Ventilator. A car equipped with insulation, including insulated side, end and top openings, and ventilating devices without ice tanks.

CLASS "X."—BOX

"XM"—Box Car. General service, suitable to lading which should be kept from the weather. A box car is a closed car having side and end housings and roof, with doors in sides or sides and ends.

"XA"—Automobile Car. Box car of similar design to general service car, having exceptionally large side doors or end doors.

"XF"—Furniture Car. Box car of similar design to general service car, except usually greater capacity in cubic feet.

"XV"—Box Car, Ventilated. Similar to ordinary box, only having ventilation, and suitable for the transportation of produce or other foodstuffs not needing refrigeration.

"XI"—Box Car, Insulated. A box car having walls, floor and roof insulated, not equipped with ice bunkers or ice baskets. This car ordinarily used for transporting vegetables, fruit, etc.

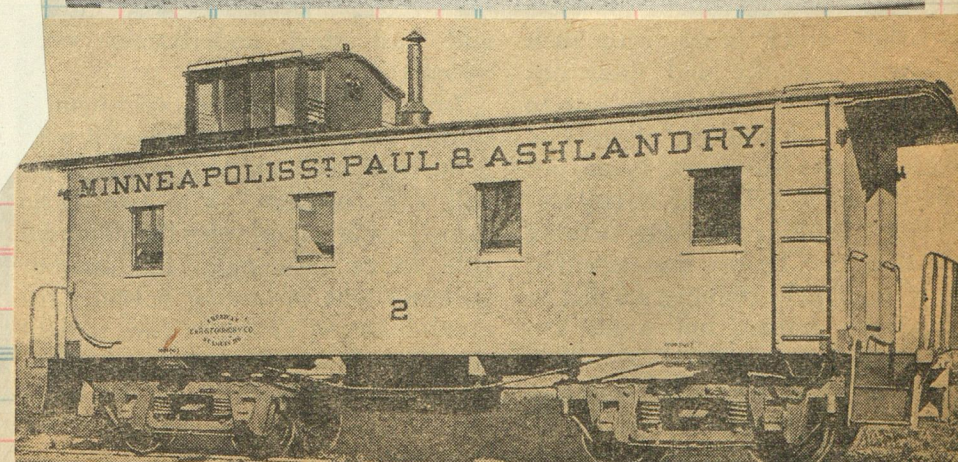
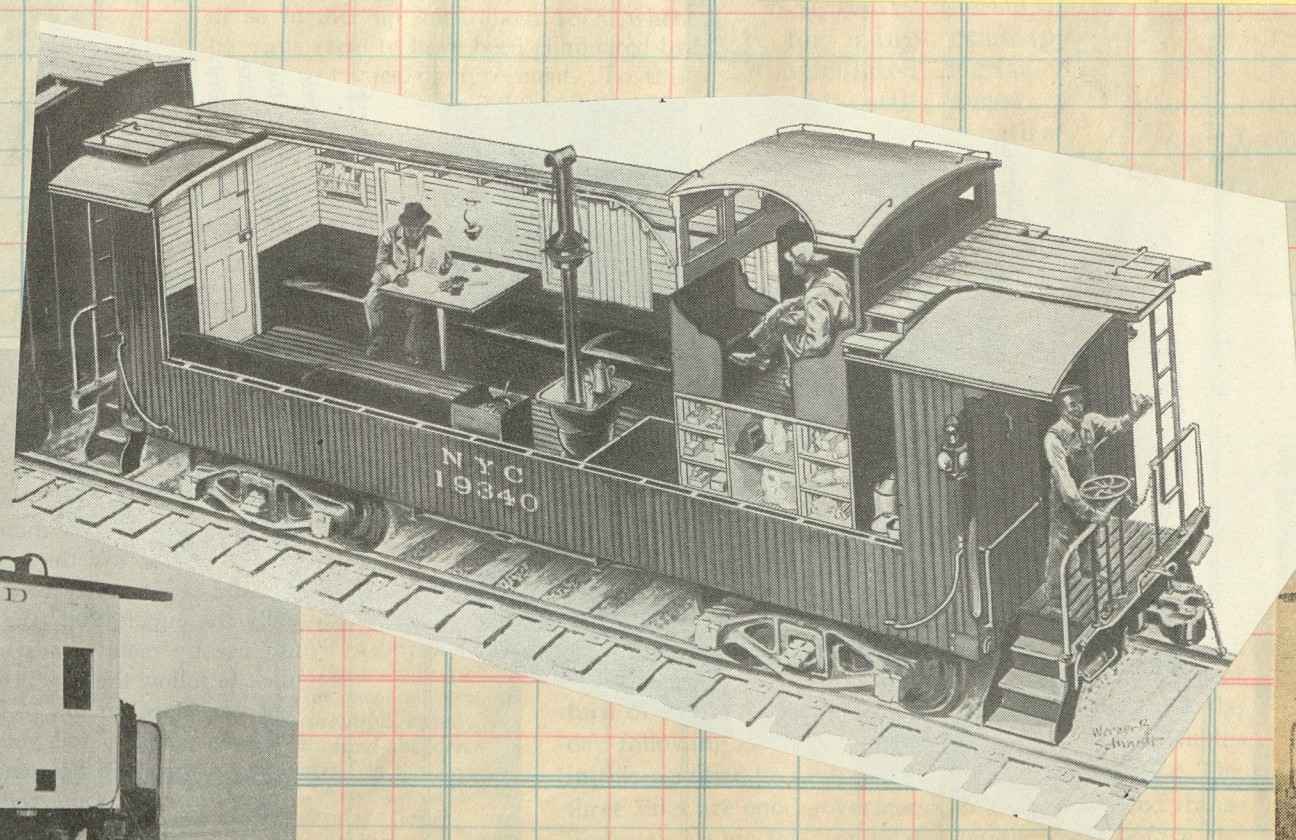
"XT"—Box Car Tank. A box car without doors, metal lined, or inclosing tank for the shipment of water or other liquids.

In addition to hopper cars and gondola cars, as described in the A. R. A. classification, there has been developed a type of side-dump car which has come into quite extensive use. These cars are suitable for use by the Maintenance of Way Department and also for ash and coal handling in railroad service, but, being fully equipped for freight train operation, they can also be used in revenue freight service for handling sand, gravel, cinders, and other loose bulk material.

Other types of freight cars as used in railway maintenance service are described in the section "Railway Service Cars."

141. How many manufacturing establishments are engaged in the construction of railway cars?

The United States Census of Manufactures reports 154 establishments engaged in the manufacture of railway cars in 1937. During that year these establishments employed an average of 44,970 persons; paid \$68,347,000 in salaries and wages; spent \$226,505,000 for materials and supplies, fuel and other purchased items, and produced equipment valued at \$335,322,000.



Photo, courtesy of the American Car & Foundry Co.
 Swing bolster passenger-type trucks applied to a caboose of the now long-abandoned Minneapolis, St. Paul & Ashland Ry.

Steam Locomotive Classification System

THE wide variety of locomotives which came into use during the latter part of the 19th century caused considerable confusion when referred to in print, as no two railroads or locomotive builders seemed to designate a given type in any particular manner. To correct this lack of uniformity several schemes were suggested to the American Master Mechanics Association and one offered by F. M. Whyte appeared to be so logical that it came into use very rapidly after 1900. Although never officially adopted, the Whyte system is universally used in the English-speaking countries. In this system numerals are used to represent the number of wheels in each group starting at the front end, the first denoting the number of wheels in the leading truck, the second the number of drivers, and the third the number of wheels in the trailing truck. In articulated loco-

motives a numeral is used for each group of drivers. The numerals are usually separated by hyphens. In addition to Whyte's classification there has come into use a nomenclature of types that is generally recognized, although there are some variations according to the railroad and builder. The following diagrams show the application of these systems to most types of steam locomotives that have been built. Because of the multiplicity of wheel arrangements in articulated locomotives the Whyte symbol only is generally used, without any given name. Unusual wheel arrangements not depicted here include the Shay, Climax, and Heislner gear truck locomotives and the Fairlie and Beyer-Garrett double-ender locomotives. Also not shown are numerous other wheel arrangements in double-ender tank locomotives.

Switching Locomotives

0-4-0	└─○○	4-Wheel Switcher
0-6-0	└─○○○	6-Wheel Switcher
0-8-0	└─○○○○	8-Wheel Switcher
0-10-0	└─○○○○○	10-Wheel Switcher
0-8-2	└─○○○○○	Transfer
0-10-2	└─○○○○○	Union

Locomotives with 2-Wheel Leading Trucks

2-2-0	└─○	Planet
2-2-2	└─○○	Single
2-4-0	└─○○○	4-Coupled
2-4-2	└─○○○○	Columbia
2-6-0	└─○○○○○	Magul
2-6-2	└─○○○○○	Prairie
2-8-0	└─○○○○○	Consolidation
2-8-2	└─○○○○○	Mikado
2-8-4	└─○○○○○	Berkshire
2-10-0	└─○○○○○	Decapod
2-10-2	└─○○○○○	Santa Fe
2-10-4	└─○○○○○	Texas
2-12-0	└─○○○○○	Centipede

Locomotives with 4-Wheel Leading Trucks

4-2-0	└─○○○	Jervis
4-2-2	└─○○○○	Bicycle
4-4-0	└─○○○○○	American—8-Wheel
4-4-2	└─○○○○○	Atlantic
4-4-4	└─○○○○○	Reading, Jubilee
4-6-0	└─○○○○○	10-Wheel
4-6-2	└─○○○○○	Pacific
4-6-4	└─○○○○○	Baltic, Hudson
4-8-0	└─○○○○○	12-Wheel, Mastodon
4-8-2	└─○○○○○	Mountain, Mohawk
4-8-4	└─○○○○○	Niagara, Northern, Pocono
4-10-0	└─○○○○○	Mastodon, El Gobernador
4-10-2	└─○○○○○	Southern Pacific
4-12-2	└─○○○○○	Union Pacific Overland

Steam Turbine and Steam Turbine Electric Locomotives

6-8-6	└─○○○○○○○	
6-6-6-6	└─○○○○○○○	
4-8-4-8-4	└─○○○○○○○	

Articulated Locomotives (Partial List)

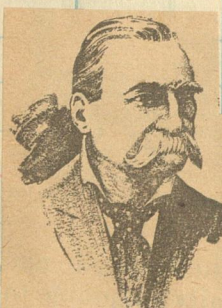
0-4-4-0	└─○○○○	
2-4-4-0	└─○○○○	
2-4-4-2	└─○○○○○	
0-6-6-0	└─○○○○○	
2-6-6-0	└─○○○○○	
2-6-6-2	└─○○○○○	Eastern
2-6-8-0	└─○○○○○	
2-6-6-4	└─○○○○○	Southern
2-6-6-6	└─○○○○○	Allegheny
0-8-8-0	└─○○○○○	
2-8-8-0	└─○○○○○	National
2-8-8-2	└─○○○○○	Western
2-8-8-4	└─○○○○○	Yellowstone
2-10-10-2	└─○○○○○	
2-8-8-2-2	└─○○○○○	Erie Triplex
2-8-8-4-4	└─○○○○○	Virginian Triplex
4-4-6-2	└─○○○○○	
4-6-6-2	└─○○○○○	S.P. Cab-in-front
4-6-6-4	└─○○○○○	Challenger
4-8-8-2	└─○○○○○	S.P. Cab-in-front
4-8-8-4	└─○○○○○	Big Boy

Nonarticulated Divided Drive Locomotives

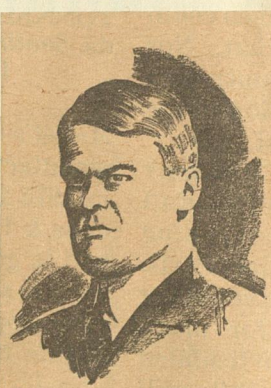
4-4-4-4	└─○○○○○	
4-4-6-4	└─○○○○○	
4-6-4-4	└─○○○○○	
6-4-4-6	└─○○○○○	

Tank Locomotives (Partial List)

0-4-0 T	└─○○	
0-4-2 T	└─○○○	
0-4-4 T	└─○○○	Forney 4-Coupled
0-4-6 T	└─○○○	Forney 4-Coupled
2-4-2 T	└─○○○	
2-4-4 T	└─○○○	4-Coupled
2-6-4 T	└─○○○	6-Coupled
2-8-4 T	└─○○○	8-Coupled
0-6-0 T	└─○○○	
0-6-2 T	└─○○○	
0-6-4 T	└─○○○	Forney 6-Coupled
0-6-6 T	└─○○○	Forney 6-Coupled
4-6-4 T	└─○○○	
4-6-6 T	└─○○○	
0-8-0 T	└─○○○	



LEFT: Anatole Mallet, who waited forty years to see his engine type gain popularity



JAMES E. MUHLFELD designer of America's first Mallet

"RIGHT OF WAY FOR THE U. S. A."

WORLD'S GREATEST ASSEMBLY LINE

America is fortunate that, with only 6% of the world's population, it has 37% of the world's total railroad track mileage.

And it is doubly fortunate that, during twenty lean years, the American railroads spent eleven billion dollars of their own money to lay heavier rails, re-enforce bridges, improve terminals and build up a transportation system which is the world's greatest assembly line.

For the railroads today are moving more freight than any transportation system in the world has ever handled before.

They provide an assembly line 236,000 miles long - which picks up coal and ore from the mine, food and fibre from the farm, wood from the forest.

They shuttle back and forth, carrying all these raw stuffs through countless stages of processing, parts-making and assembly, until finished war goods are delivered to the millions of men in our camps, and to ships waiting of victory to armies around the world.

A million and a third tons move a mile every minute on this assembly line, and more than a million loyal and hard-working railroad men keep 'em rolling.

HELP MAKE TRANSPORTATION GO ROUND - Passenger traffic has doubled in the last year. And the railroads want to carry everyone who must travel. So won't you do this to help?

1. Plan early - make reservations and buy tickets as soon as you can. 2. Avoid week-end midweek travel is less crowded, more comfortable. 3. Travel light - don't carry more baggage than you really need. 4. Cancel promptly - when your plans shift, release your reservations quickly. Someone else needs them.

Thank You.

UNITED FOR VICTORY

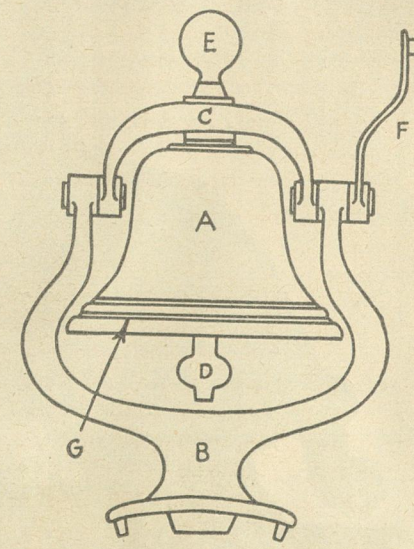
Association of AMERICAN RAILROADS

Washington D. C.

TRAINS 49 MAY 1943



Famed for the tone and yoke design of its bells was the Manchester Locomotive Works. In 1887 it moulded the above for Engine 95, last Santa Fe 4-4-0 in service when scrapped in '40



Typical bell consists of A, bell; B, stand; C, yoke; D, clapper; E, plain slotted nut with cotter pin; F, bell-ringer handle or crank; G, ornamental flutings. Nut E was often shaped like a ball, acorn or eagle

HOW much money did American railroads pay in taxes last year?

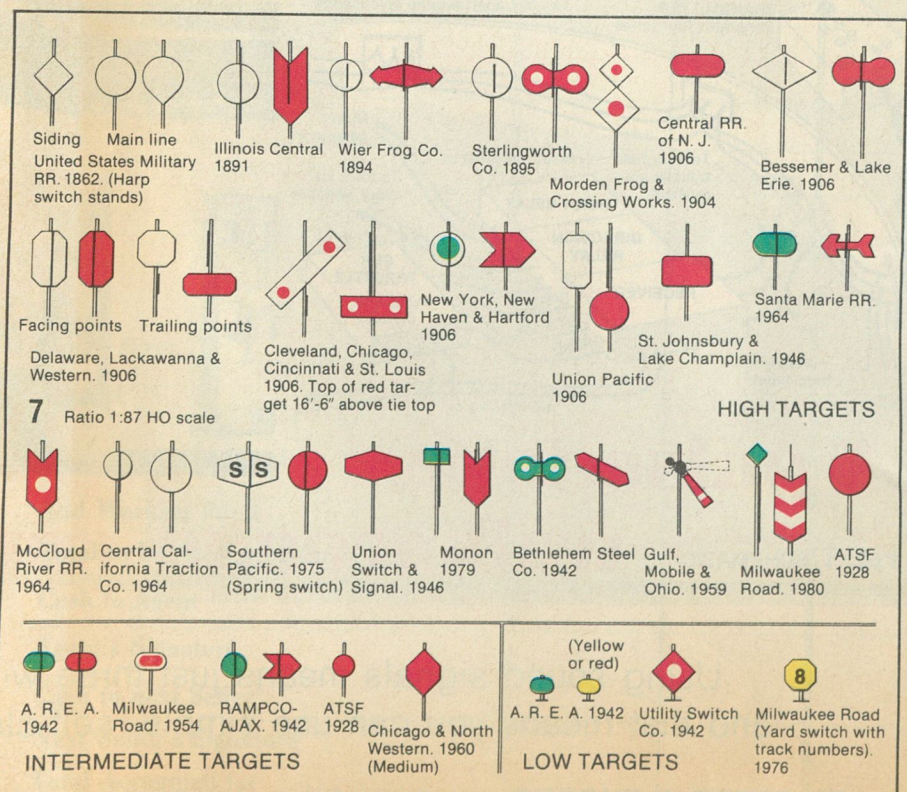
Plenty! Railroad taxes in 1944 were by far the highest on record, \$1,900,000,000. In order to meet taxes alone, the revenue derived from 73 days of operation was required.

HOW many men are employed by U. S. railroads? How many are unemployed?

(2) How many miles of railroad have been abandoned in the last 13 years?—E. N.

(1) The figure stands around 1,100,000 right now. Although there were slightly more than 2,000,000 railroad employees in 1920, the all-time peak, it is going strong to state that 900,000 railroad people are out of work. Taking the 1924-1929 average (1,737,000) as normal, we could say 637,000 less people work for railroads now than ten years ago. Our guess is that half of them have found other occupations, and therefore a little more than 300,000 of these railroaders are jobless. On the other hand, such figures bear no relationship to the population trend. Honest statistics would probably show that if all employables were employed, and even if the railroads were allowed only their present percentage of the transportation business, at least 1,800,000 people could find necessary places on railroad payrolls.

(2) Between 1922 and 1935, inclusive, 12,370 main line miles of railroad were abandoned, 7,166 of them within the last four years; during the same period, however, 11,230 main line miles were constructed, 329 miles of them in the last four years.

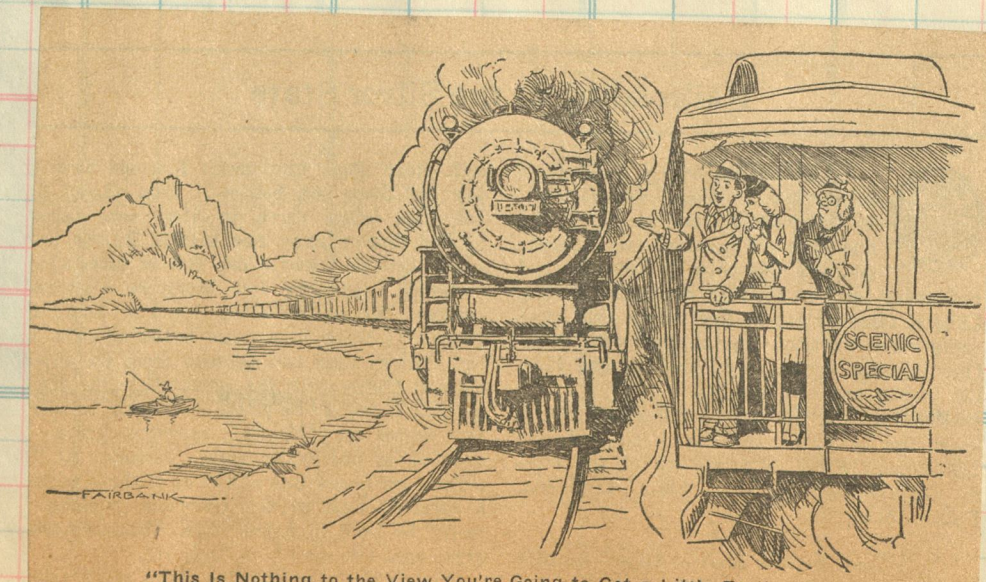


EVERY POUND OF COAL

Saved by the Railroads
Per Unit of Work During 1924
Compared with 1923 Prevents a Waste of \$3,165,000

INTERNATIONAL RAILWAY FUEL ASSOCIATION

Facsimile of a Bulletin Recently Issued by the International Railway Fuel Association.



"This Is Nothing to the View You're Going to Get a Little Further On"

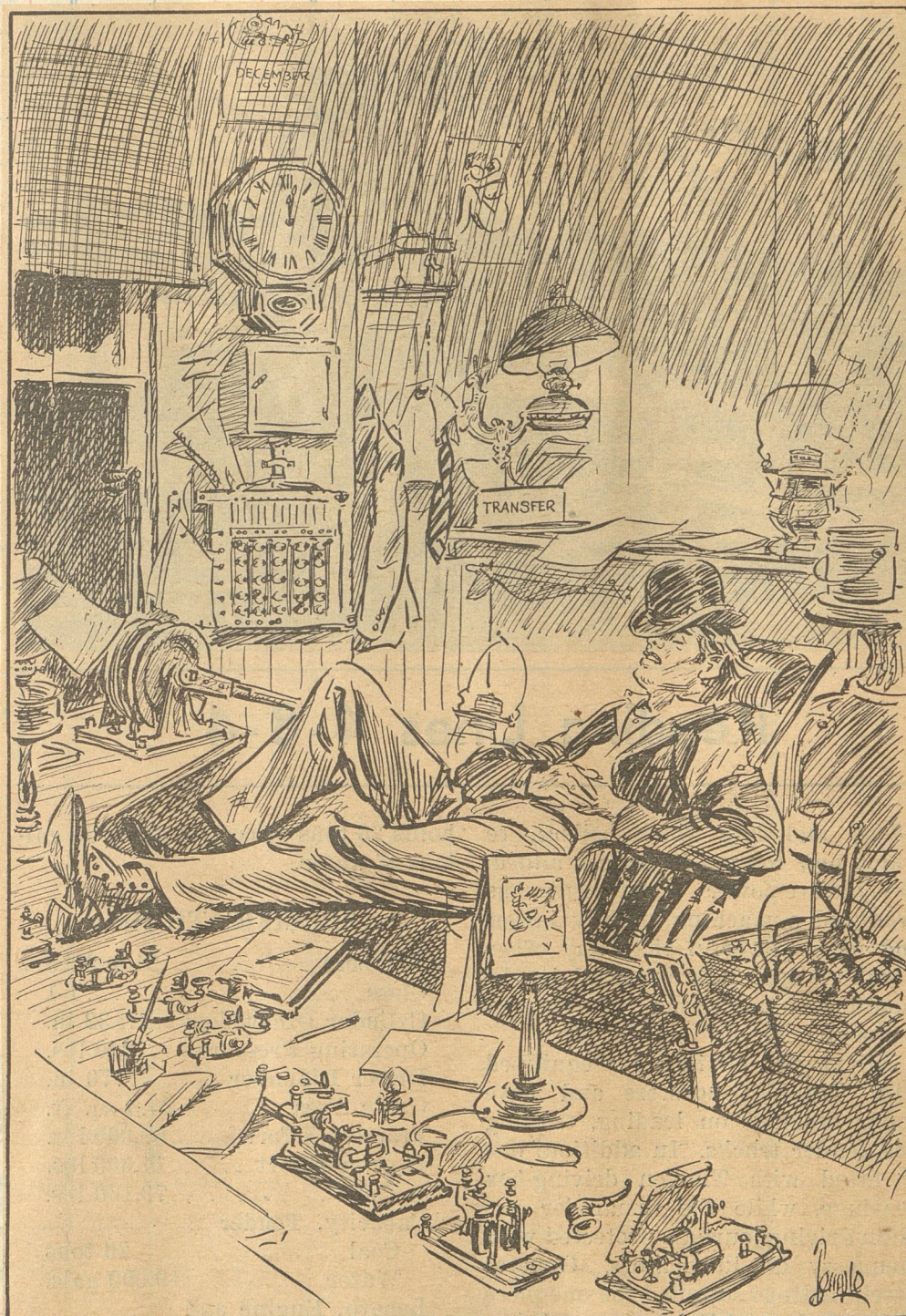


"Ground Number Ten East, Say When." That's the Title Given to His Authentic Scene by

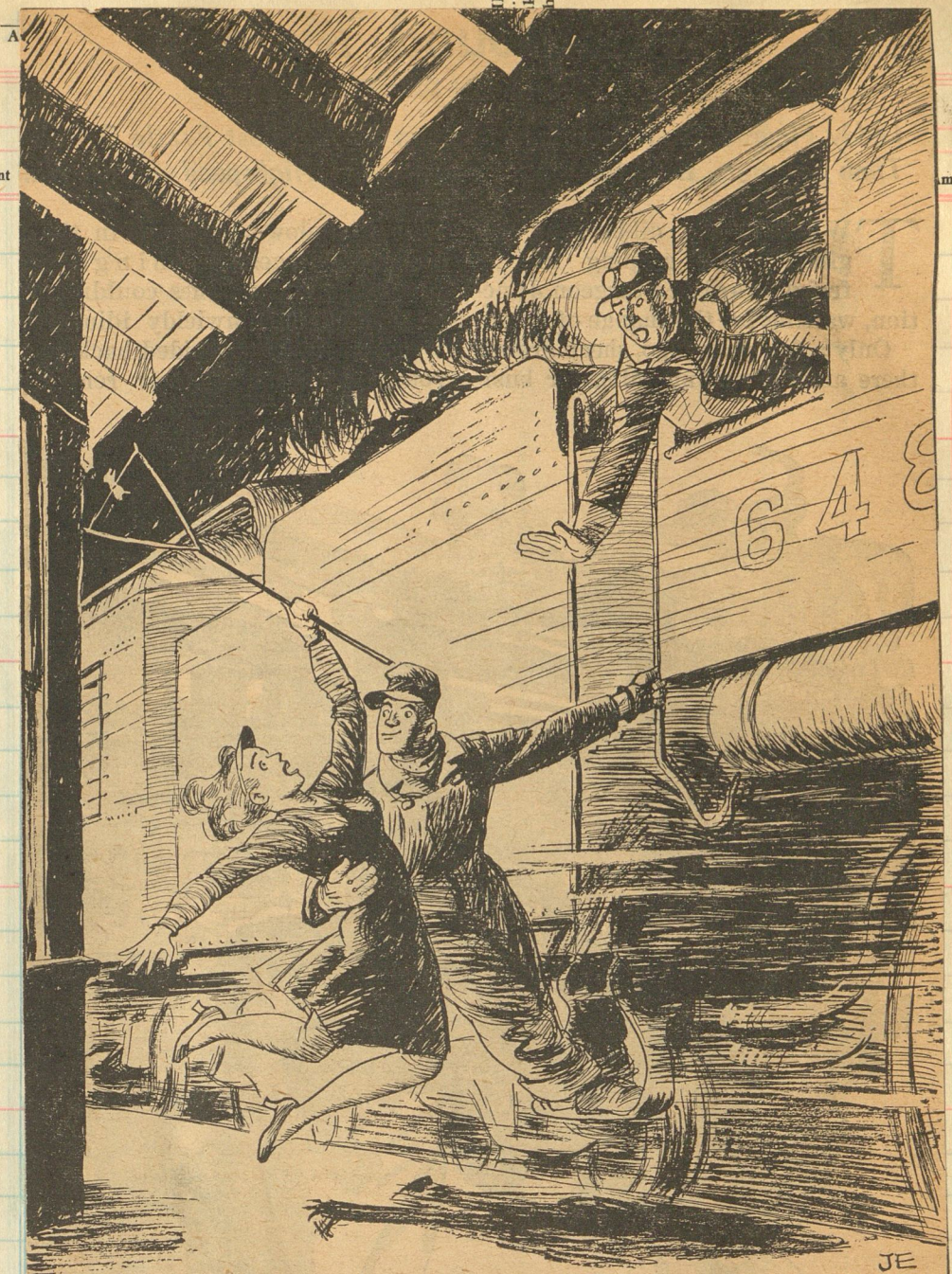
The distinct success of the new Railroad
Man's Magazine is due to its complete
and exclusive presentation of the quick
drama and high romance of railroading

The distinct Success Of the new Railroad
Man's Magazine is due to its Complete
and exclusive Presentation Of the quick
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Prize-Winning Specimens of Op Fist (Telegraph Operator's Handwriting). Both Won Highest
Awards in Penmanship Contests Conducted by This Magazine. The Lower One is That of Miss
Isabelle Lowry, a Young Brass Pounder on the Great Northern in Montana, Who Captured 1930
Honors. The Upper Sample Was Written by Benjamin H. Tidrick of Iowa, an Old-Timer, the
1917 Champion



HAPPY NEW YEAR! Harry C. Temple
12:01 a.m. on the Graveyard Trick



Not in the Wheel Report By JOSEPH EASLEY

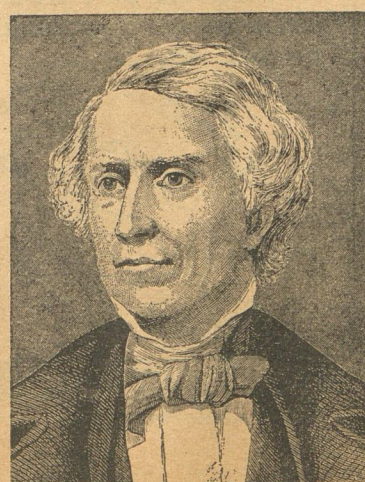
No, no—just the train order—not the operator!!

Morse code

A	..-.	S	...
B	-...-	T	.-.
C	-.-.-	U	..-
D	-..-	V	...-
E	...	W	-.-
F	..-.-	X	..--
G	-.-.	Y	-.--
H	....	Z	---.
I	..	1	....
J	.-.-	2	....
K	-.-.-	3	....
L	.-..	4	....
M	---	5	....
N	-.-	6	....
O	---	7	....
P	.-.-	8	....
Q	-.-.-	9	....
R	.-.-	0	....

Period	..-.-
Comma	aa
Dash	dx
Colon	ko
Semicolon	sc
Question mark	dn
Opening quotation	qn
Closing quotation	qj
First bracket or opening parenthesis	pn
Second bracket or closing parenthesis	py
Dollar sign	sx
Exclamation mark	---
One-half	1e2
One-third	1e3
etc.	

EVERY telegrapher worth his salt in-
vested in a practice set with "bug" speed
key (top). Sets also had sounder bar in
resonator box, repeater relay, hand key.



INVENTOR Samuel F. B. Morse



BACK IN THE DAYS
Twelve Noon: Click, Click, Click Harry C. Temple

The Vanishing Iron Horse

As the midpoint of the 20th century was reached, the curtain was falling upon the final phases of steam locomotive operation in North America. Almost certainly, after another decade there would remain in service comparatively few representatives of the engine which had been the primary source of motive power of the railroads for over a hundred years.

In that comparatively short time the steam locomotive had changed the United States from a small country with a few seaports, and with towns and settlements little farther inland than river navigation permitted, to a great nation covered with cities and spanning a continent. It had made possible the confederation of the isolated provinces of Canada into a great Dominion. Now, by the 1950's, owing to the emergence of another type of motive power, it had become obsolete and its days could be numbered.

No future generation would experience the thrill enjoyed by its predecessors. No future American could stand awed beside the track and behold the majestic onrush of the iron horse, be deafened by the blast of the exhaust, the crash and clatter of steel on steel, and the hiss of escaping steam, or be momentarily shaken as the locomotive thundered past in a blurred flash of connecting rods, valve mechanism, and pounding wheels.

No child at night would ever again awaken to the eerie echo of a far-off steam whistle crying at a lonely crossing, or by day look out from a hillside at the long white plume of steam that marked a distant train charging down the valley below. The present generation of Americans can gaze back upon these things with nostalgia. The next will never know them.

Here and there a steam engine will be saved, but the people of a different era will note them and quickly pass on, wondering. Only a few will pause to marvel and ponder over the development of the steam locomotive.

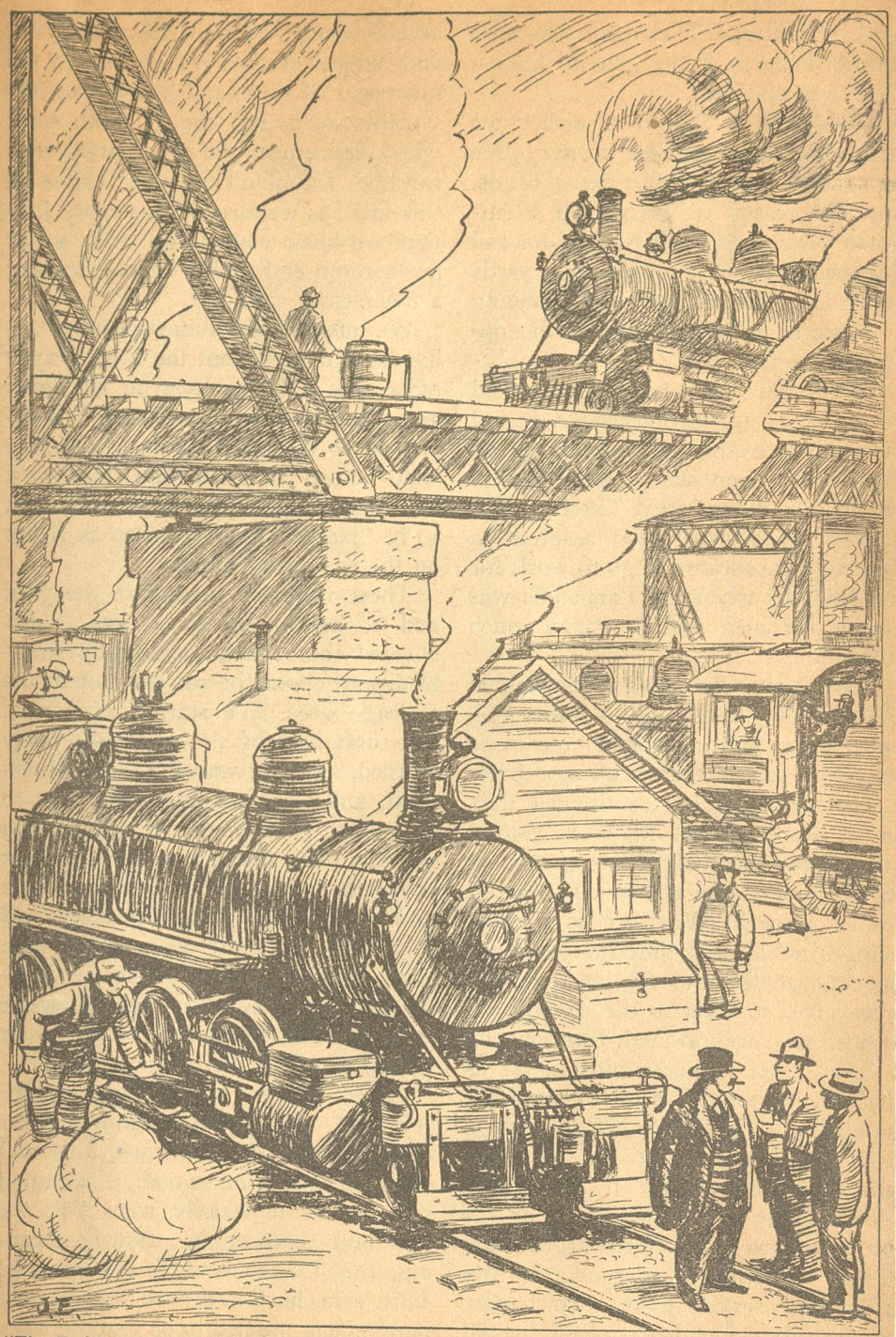
It is to the everlasting credit of our forebears that some few examples and relics of the early engines have been preserved; and the appearance of this study of them, coming in the final hour of the steam locomotive, is most appropriate. The author has gone to painstaking lengths to find and sift and bring together the most complete record ever compiled of these examples and relics remaining of the earliest of North American railway engines and of working replicas of them.

Students of locomotive and railroad history are familiar with the almost impossible task confronting the researcher who undertakes to trace the history of early engines. The contemporary account is often a will-o'-the-wisp pursued endlessly through the yellowed pages of century-old newspapers and books; the seemingly authentic fragment of fact is found to be faulty just when it seems flawlessly correct; the colorful description of some ephemeral engine of the past just cannot be reconciled with contemporary accounts and finally proves to have been prepared long afterward, replete with the inaccuracies which most unfortunately result from the inroads made by time upon the recollections of the most careful observer.

Through all this confusing maze the author step by step has made his way, the result being a most noteworthy and valuable contribution to the literature of the steam locomotive. To students of its history, to the vast body of railway enthusiasts all over the world, and to those generally interested in the development of mechanical industry and transportation, this work must appeal as unique and one that will be long remembered.

THOMAS NORRELL

July 1955
Silver Spring, Maryland



The First Quarter Century of Steam Locomotives in North America by Smith Hempstone Oliver
United States National Museum Bulletin #210
1956



No poem to M. of W. and operating departments is the First Snowfall
Photo by O. Winston Link, from Frederic Lewis

The Track Walker
By S. H. MAHON, Night Bill Clerk, East Toledo, Ohio

DID you ever stop to think as your train rushed madly on
Who is the one who makes it safe for you to ride along?

'Tis a man who's never seen, as he heaves a weary sigh,
By those who ride in safety as their train goes swiftly by.

He never falters in his task to see the track is clear
Nor fails to flag the rushing train when death is lurking near.

Ofttimes your train comes to a stop, you gaze out in the storm
And ask the reason why the delay while you sit there all warm.

You never take a thought of him who, facing storms of hail,
Yet saw a switch had been misplaced, or found a broken rail.

He walks the track in loneliness, when danger 'round him lurks;
With frozen feet and stiffened hands, his duty never shirks.

He leaves his wife and babies sweet, to tread the tracks alone
To see that others rushing by may safely reach their home.

The thoughts of his who are at home, tucked in their little bed,
Urges him to face the winter's storms to make things safe ahead.

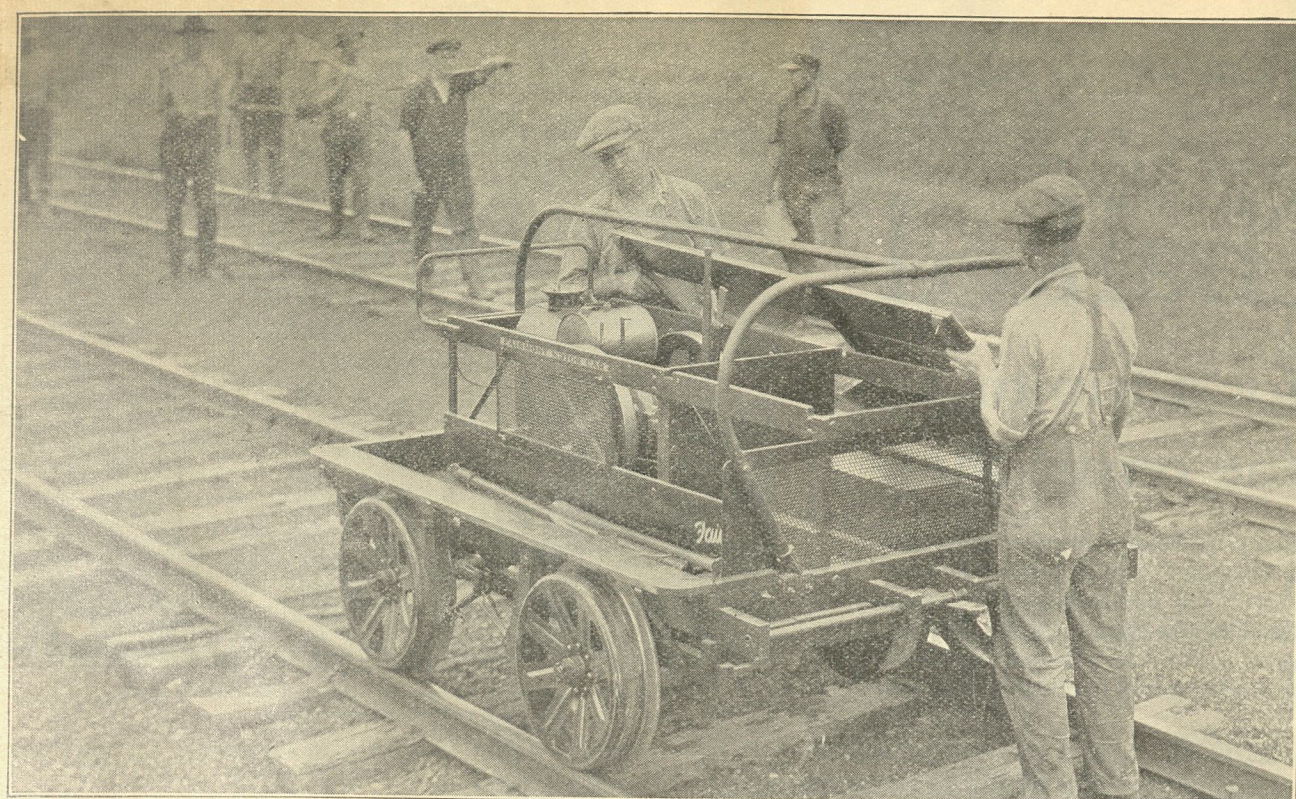
So while you're going madly by, just take a thought of one
Who faces winter's chilly blasts and dares the blinding storm.

Who watches as the train goes by to see that all is right,
That makes it safe for those aboard while rushing through the night.

'Tis the man who walks the tracks and faces wind and rain
To see that all is safe ahead for those who ride the train.

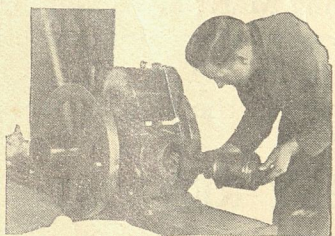
He may be of foreign birth, and his home be but a shack,
But don't forget your safety lies in him who walks the track.

North American Railroad Tunnels					
Over One Mile Long					
Name	Location	Railroad	Length	Tracks	Ruling Grade
Cascade	Berne-Scenic, Wash.	GN	41,152	1	1.57
Moffat	East Portal, Colo.	D&SL	32,798	1	0.90
Connaught	Glacier, B.C.	CPR	26,518	2	0.95
Hoosac	North Adams, Mass.	B&M	25,081	2	0.50
Mt. Royal	Montreal, Que.	CNR	16,645	2	0.60
Hudson River	Penn. Term., N.Y.C.	PRR	15,600	2	1.90
East River	Penn. Term., N.Y.C.	PRR	14,172	4	1.50
Snoqualmie	Hyak, Wash.	CMS&P	11,890	1	0.41
Park Ave.	G.C.T., N.Y.C.	NYC	10,440	4	1.02
No. 41	Norden, Calif.	SP	10,326	1	1.47
Stampede	Martin, Wash.	NP	9,834	1	0.74
St. Paul Pass	E. Portal, Mont.	CMS&P	8,774	1	0.20
Detroit River	Detroit, Mich.	MC	8,390	2	2.00
Sandy Ridge	Dante, Va.	CCC&O	7,854	1	0.50
No. 26	Hasson, Calif.	SP	7,369	1	1.09
Howard St.	Baltimore, Md.	B&O	7,341	2	0.80
No. 35	Spring Garden, Calif.	WP	7,335	1	0.70
B&P	Baltimore, Md.	PRR	6,994	2	1.34
Edgewood No. 2	Abbott, Ill.	IC	6,994	1	0.00
No. 25	Tunnel, Calif.	SP	6,976	1	2.00
Big Bend (Old)	Hilldale, W. Va.	C&O	6,500	1	0.42
Hagans	Hagans, Va.	L&N	6,244	1	0.30
No. 1	Wrights, Calif.	SP	6,207	1	0.27
Big Bend (New)	Hilldale, W. Va.	C&O	6,168	1	0.15
Boulder	Amazon, Wash.	GN	6,145	1	1.30
St. Clair	Sarnia, Ont.	CNR	6,028	1	2.02
No. 37	Chilcoot, Calif.	WP	6,001	1	0.50
Aspen	Aspen, Wyo.	UP	5,941	1	0.40
No. 2	Glenwood, Calif.	SP	5,792	1	0.28
No. 43	Jasper, Nev.	WP	5,671	1	0.36
No. 3	Glen Frazer, Calif.	AT&SF	5,596	1	0.89
No. 18	Peninsula Jct., Ore.	UP	5,436	1	0.26
Otisville	Otisville, N.Y.	Erie	5,314	2	0.15
Quebec	Wolfe's Cove Br., Que.	CPR	5,288	1	0.80



M2-SECTION CAR

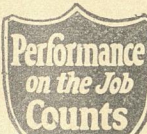
Reasons for Fairmont Leadership and Economy



Accessibility of All Parts. Water jacket, cylinder head, carburetor, ball bearings, in fact all important units of the power plant can be easily dismantled without disturbing other major units. The removal of 19 nuts completely dismantles the engine. Ask the maintainer if this means economy.

Note These Figures

Time—A month in 1923.
Place—A division on Class 1 Railroad in U. S. A.
Performance—75 Fairmont Section Motor Cars transported an average of 6.8 men with tools and trailers over 21,375 miles of track—average age of cars 4.5 years.
Cost per car per 100 miles:
Operation.....1.18
Maintenance......55
Overhead......98
TOTAL.....\$2.71
Name of railroad furnished on request.



Getting It Done The Fairmont Way

Getting the men to work on the dot, in comfort and safety—this is the big thing Fairmont Motor Cars do, a big time-saving, labor-saving job.

Day after day, getting it done dependably and at lowest cost—this is the Fairmont way, as records prove beyond question and to everybody's satisfaction.

After repeated, comparative tests, this equipment is the choice on more than 700 railways all over the country. They are demonstrating their ability to deliver maximum power, dependability, safety and comfort, consistently and economically.

One reason for the unusual efficiency of Fairmonts is the fact that this Company takes into account in their building, all other angles of railway service. Their responsibility does not cease with making good motor cars—they must be adaptable to varying conditions.

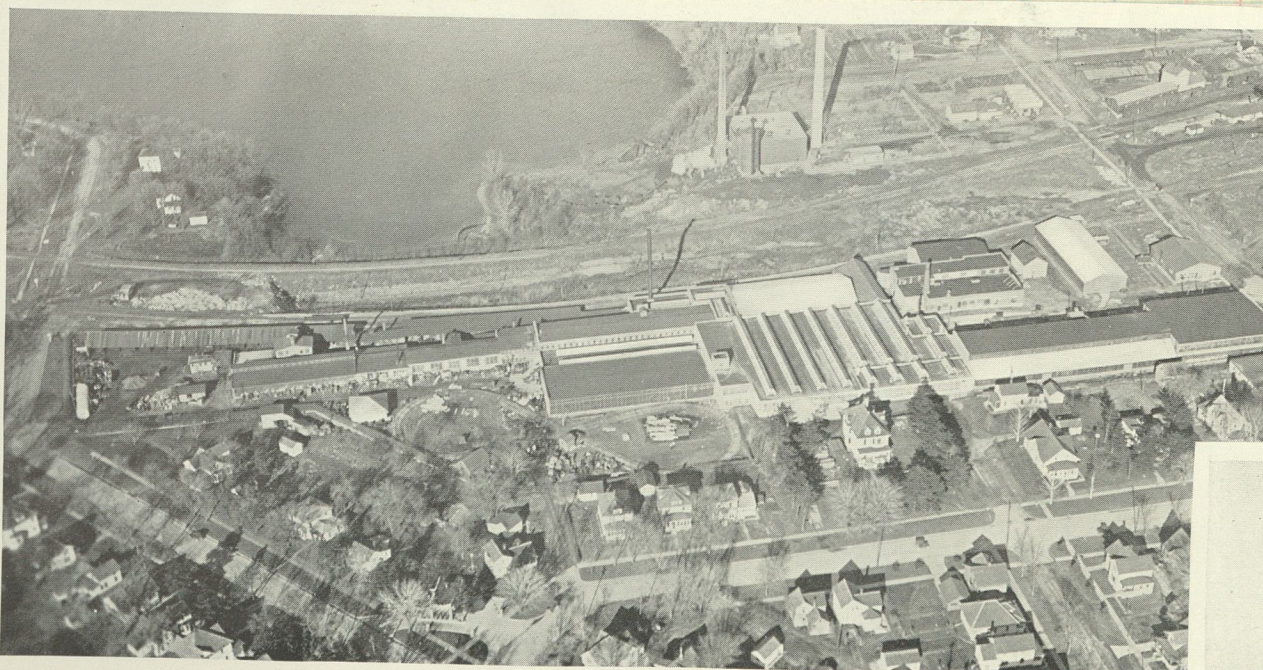
The result is that Fairmont builders have developed and brought to perfection most of the vital improvements in this important line of railway work.

Please read carefully the Panel descriptive of the Accessibility of parts in Fairmont. Then write us for still further information.

FAIRMONT RAILWAY MOTORS, INC., Fairmont, Minn.

Fairmont

Ball-Bearing Engines and Railway Motor Cars



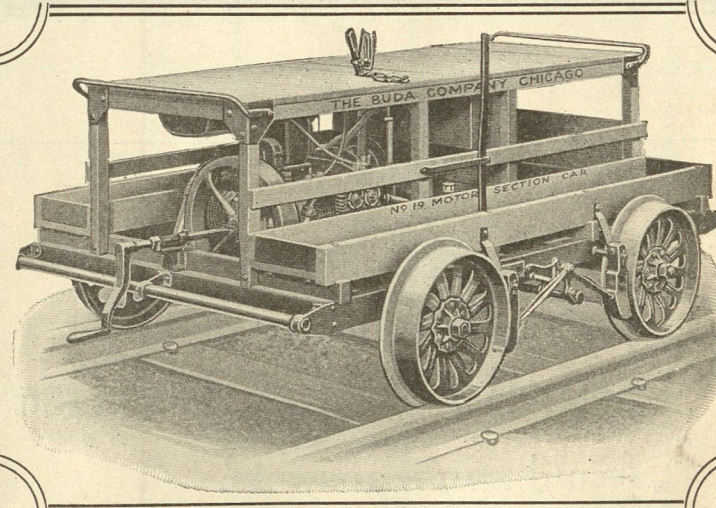
Airplane View of the Plant of Fairmont Railway Motors, Inc., at Fairmont, Minnesota, Looking Toward the North



54

RAILWAY AGE

October 1, 1920



Safety — First

Instructions to Motor Car Operators

The following is copied from Instructions to Section Motor Car Operators on a prominent Trunk Line:

"The speed must not exceed twenty miles per hour at any time. Run slowly through frogs, switches and around curves. Approach street or railroad crossings, station platforms or persons or animals near track under full control."

Buda No. 19 Motor Section Car

Starts by Cranking Like an Automobile

and has a 2-cylinder 4-cycle engine. Only with 4-cycle engines can the speed be varied from 3 to 20 miles per hour. The operator has perfect control of the speed of this car within these limits, which insures "Safety First."

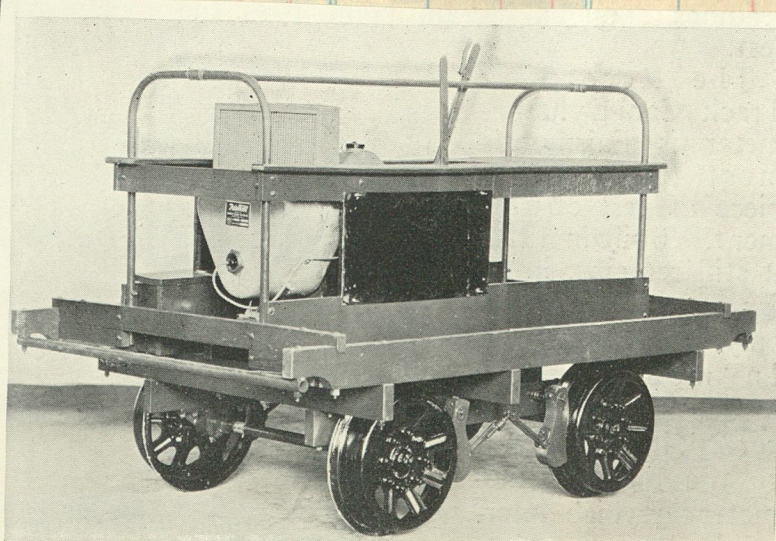
In addition to getting your men with their tools to the work safely and quickly, the No. 19 car will pull a push car loaded with ties, tools, angles, bolts, etc.

Let us send complete information

THE BUDA COMPANY

HARVEY (CHICAGO SUBURB) ILLINOIS

NEW YORK	CHICAGO	ST. LOUIS
30 Church St.	Railway Exchange	Railway Exchange
LONDON		BUENOS AIRES
147 Oxford St. W. I.		769 Avenida de Mayo

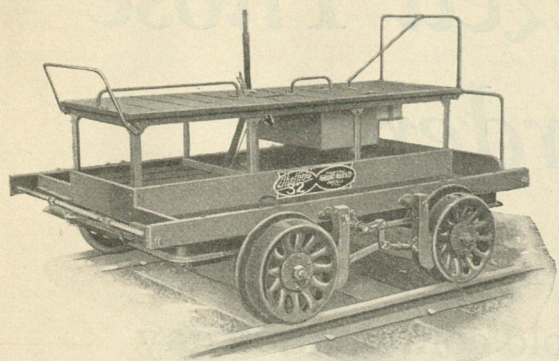


A Fairmont SM2 Section Car Used by San Rafael Paper Mills, Mexico City. The Vapor Condenser Above the Water Jacket Keeps the Engine Cool in Hot Climates or High Altitudes, on a Minimum Quantity of Water

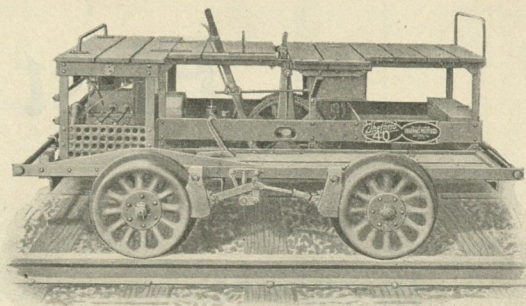
BUDA

ESTABLISHED
1881

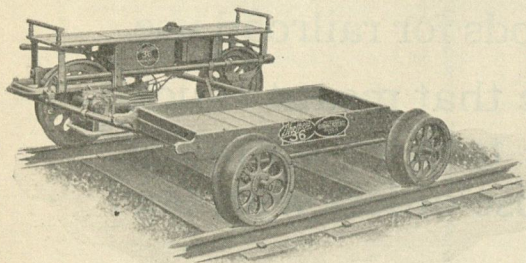
Sheffield Railway Motor Cars



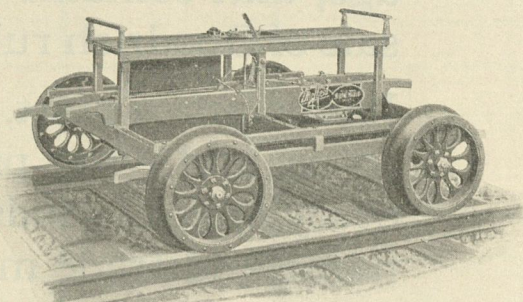
No. 32 Section Motor Car—10 years of service without overhauling



No. 40 Heavy Duty Car for Section, Bridge and Extra Gangs.



No. 36 A Light, Powerful, Side Load, One Man Inspection Car.



No. 41 A Light Center Load, Safety First Inspection Car.

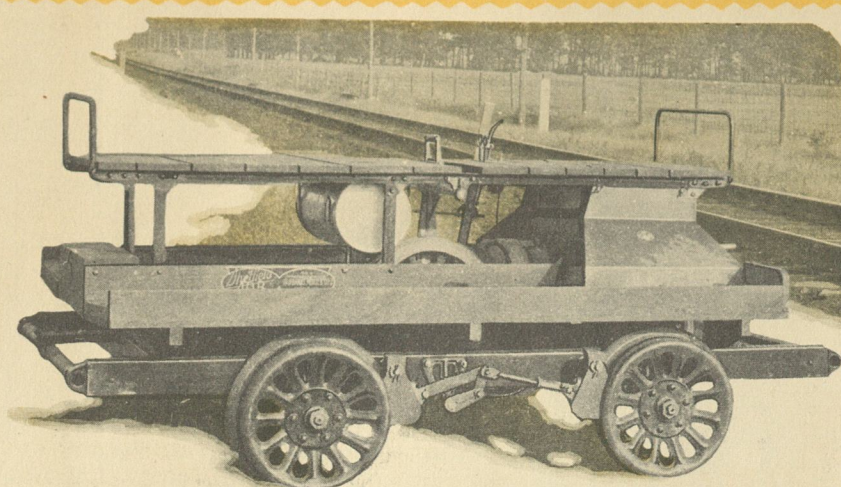
Sheffield

Standpipes
Hand Cars
Push Cars
Velocipede Cars
Cattle Guards



Fairbanks, Morse & Co.
MANUFACTURERS CHICAGO
The Canadian Fairbanks, Morse Co., Ltd., Montreal

Oil Engines - Pumps - Electric Motors and Generators - Fairbanks Scales - Railway Appliances - Farm Power Machinery



The Sheffield 40-B
Automobile type pressed steel frame.
Air-cooled 2-cylinder 4-cycle engine designed for exceptional torque at low speeds.
Three-point suspension of engine.
Timken roller bearings in engine and axle bearings.
Greatly simplified friction transmission.

Incorporating the best automotive practice

in section motor cars of long-established dependability

In the Sheffield 40-B—the fine car of section motor cars—and in the Sheffield 45—the newest Fairbanks-Morse car—the best features of automotive engineering have been incorporated. Sheffield Motor Cars, the pioneers, still definitely lead the field.

The Sheffield 40-B gives you super performance. Plenty of power for trailing loads on grades, for pulling

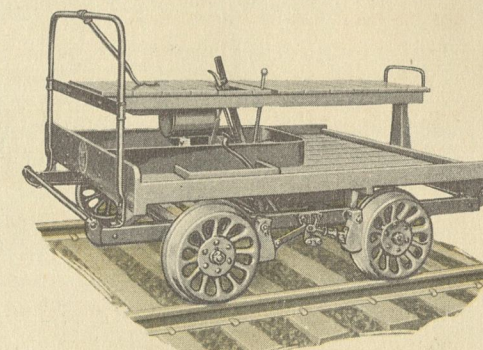
against head winds—for the extraordinary as well as the usual demands.

The Sheffield 45, patterned after the “40-B” but less highly powered, gives remarkable economy in all ordinary section and extra gang service. It has the largest deck space ever provided on a section motor car—22 square feet of unobstructed surface.

Note special features listed.

The Sheffield 45

Patented Ricardo cylinder head gives more power.
Three-point suspension of engine.
Crankshaft mounted on Timken bearings; countershaft on SKF self-aligning ball bearings.
Auto type pressed steel frame.
Largest deck space ever provided on section motor car.



FAIRBANKS-MORSE MOTOR CARS

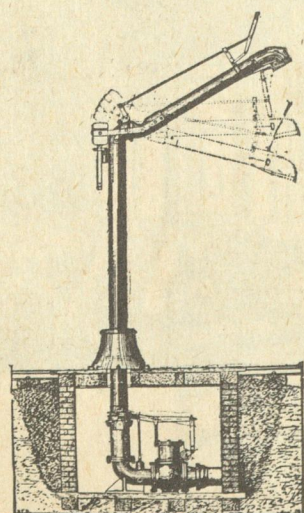
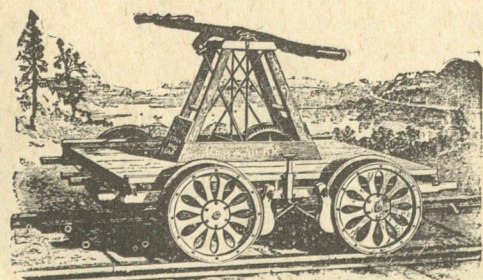
First on the rails — and still first

1926



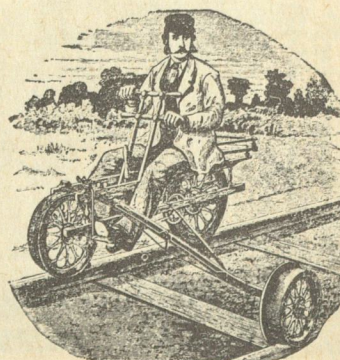
Automatic “Cut Out” Switches.

ROTATING WATER CRANES.



All of improved design, and adopted as standard by a large number of leading lines.

IMPROVED
PLANTATION
CARS.



Sheffield Velocipede Car Co.,

THREE RIVERS, MICH.

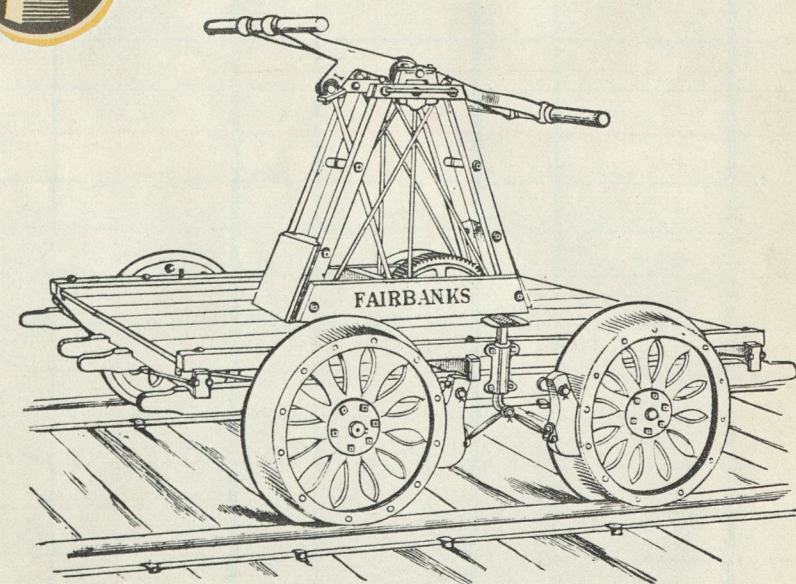
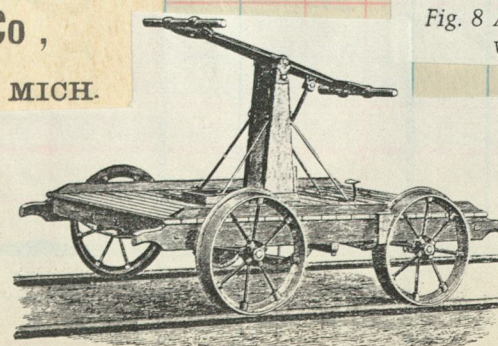


Fig. 8 An 1889 version of the Sheffield hand car shows wooden spoked wheels which was one effort to produce light wheels.

Hand-Cars, Road-Masters' Cars,
Push-Cars, Bridge-Builders' Cars,
Track-Laying Cars, Dumping-Cars.

THREE-WHEELED CARS,
Various Styles.



HEAVY, EXTRA STRONG CONSTRUCTION HAND CAR
By the Bucyrus Foundry & Manufacturing Co., BOSTON, MASS.

Several styles of push and lever cars produced by Bucyrus Fdy. & Mfg. Co. are shown in this engraving from the June 15, 1883 Railroad Gazette.

The illustration shows Type L "INDUSTRIAL" Crane, belonging to the Western Maryland R. R., trimming a high bank. It is equipped with 1½ cubic yards capacity dipper and 40 ft. boom, giving an exceptionally long reach and enabling the Crane to work effectively in wide cuts and to load cars or wagons efficiently.

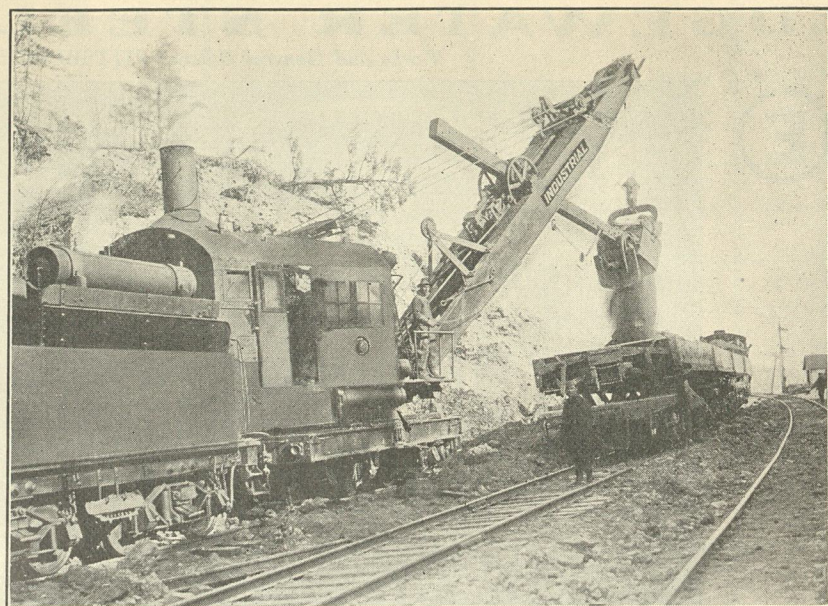
The crowding engines on the boom insure the speediest, the most economical, and most accurate work.

This Crane is arranged to burn fuel oil and also was furnished with a 50 ft. lattice boom, 12½ K. W. generator, 55" magnet, and 1½ cubic yards capacity "INDUSTRIAL" Power Wheel Grab Bucket. With the substitution of the lattice boom the Crane is readily available for bucket or magnet operation. It may also be converted into a pile driver by the addition of pile driver leads.

It is hard to imagine a more valuable piece of equipment. Here in one model—you have a steam shovel—a locomotive crane for bucket or magnet operation, and a pile driver.

If it seems as though a Type L would fit into your requirements, we will be very glad to supply more detailed information.

Have you a copy of our Railroad Catalog No. 110?



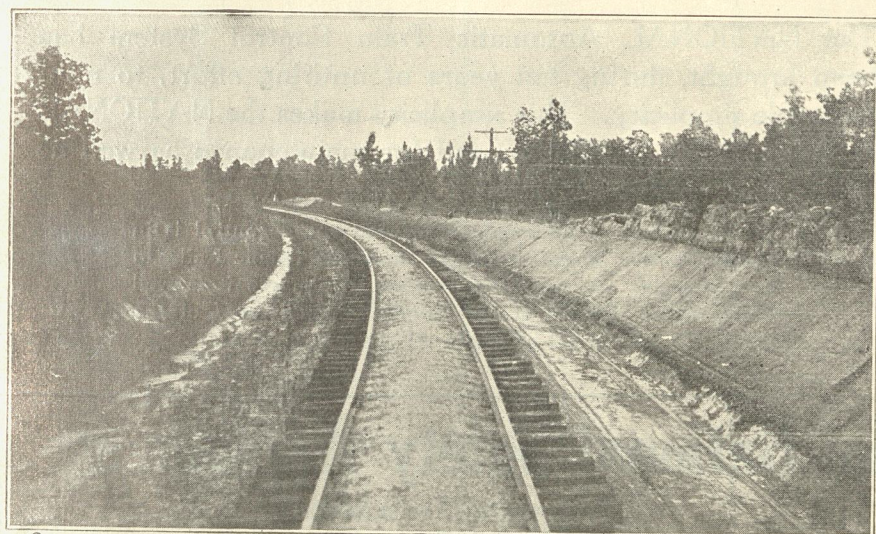
INDUSTRIAL WORKS
BAY CITY, MICHIGAN.

NEW YORK 50 Church Street
PHILADELPHIA Widener Bldg.
DETROIT Book Bldg.
CHICAGO McCormick Bldg.
F. H. Hopkins & Co., Montreal and Toronto, Canada



Locomotive, Locomotion and Wrecking Cranes, 5 to 200 tons capacity. Pile Drivers, Pillar Cranes, Transfer Cranes, Gantry Cranes, Crawling Tractor Cranes, Rail Saws, Grab Buckets, Double-Acting Steam Pile Hammers, Wood Grapples. Prompt deliveries can be made on any type of Crane

For Perfectly-Formed Ditches and Uniformly-Shaped Banks Use the Jordan Spreader-Ditcher



O. F. JORDAN CO.

East Chicago, Indiana



The JORDAN Marches On

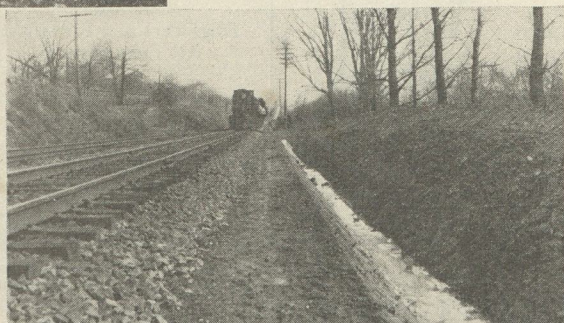
Doing the Work of an Army of Men

IT IS "ON TRACK EQUIPMENT"

and Requires a Work Train

BUT

- ✓ It's All Year-'Round
- ✓ Spreads Material
- ✓ Shapes Ballast
- ✓ Digs Ditches
- ✓ Fights Snow
- ✓ Has Low Operating Cost



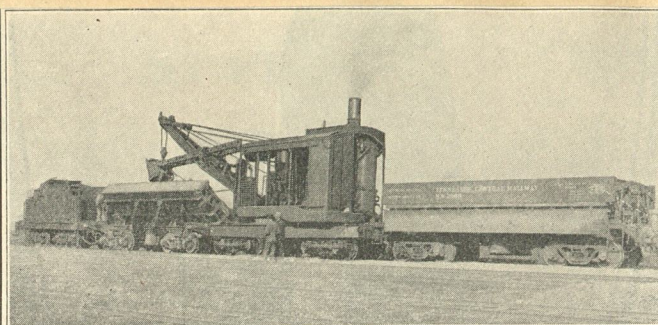
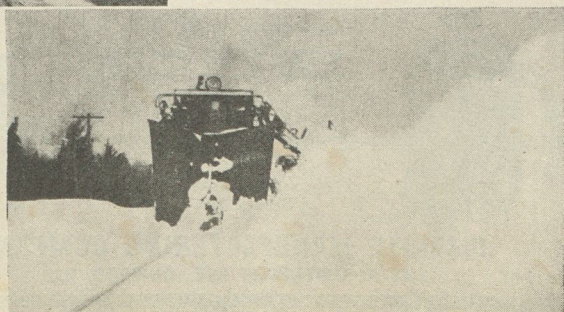
Since 1935
40 Railroads
Have Purchased
New Jordans
Or Had Their Existing
Jordan

**Spreader-Ditcher-
Snow Plows**

Completely Rebuilt and Modernized

O. F. JORDAN CO. EAST CHICAGO, IND.

Walter J. Riley, Pres.

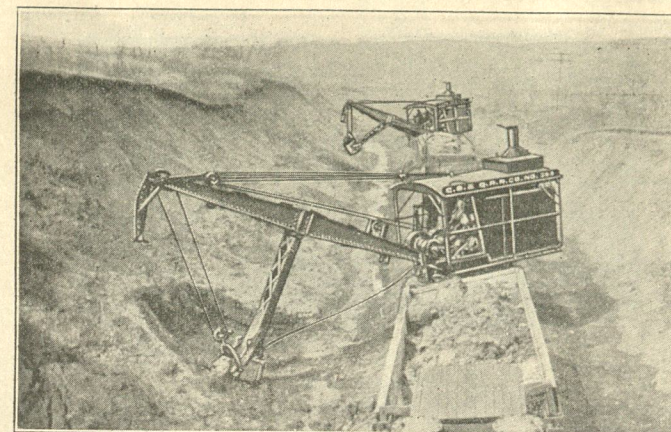


The Last Word in Right-of-Way Ditching Economy

The "AMERICAN" Locomotive Ditcher is the last word in right-of-way ditching economy and efficiency. It saves the cost of a work locomotive and crew by handling its own work train.

Write for descriptive booklet detailing possible savings.

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, New Orleans.
Ry AGE 1924



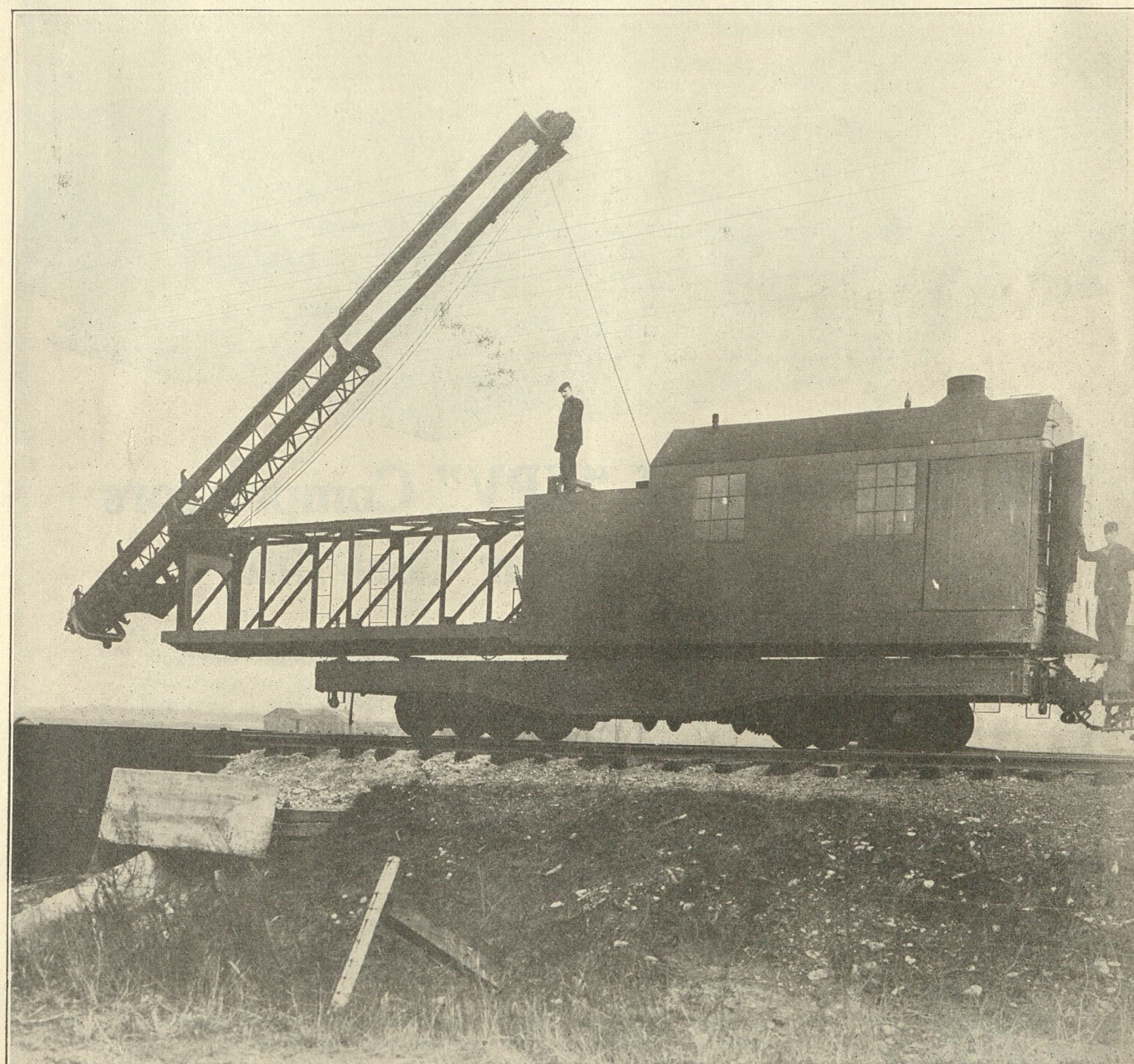
The Burlington tried 'em all— then bought two "Americans"

Every yard the "American" takes out of a cut it gains a few cents on machines with a lower first cost—and it isn't long before it has made up the difference in first cost between it and machines not so well adapted to right-of-way ditching service. Recently the C. B. & Q. R. R. realized this and bought two "Americans."

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York - Chicago - Pittsburgh - Seattle - New Orleans

1923

LOCOMOTIVE CRANES
CLAM SHELL BUCKETS - SHIPBUILDING CRANES
CAR DUMPERS PILE DRIVERS
THE McMYLER INTERSTATE CO.
CLEVELAND OHIO



Standard No. 12 Railroad Pile Driver

The McMyler Interstate No. 12 Pile Driver is a very good machine for the usual service as encountered in connection with railroad construction work. In addition to the usual pile driver equipment, this machine is equipped with propelling mechanism with two speed reductions, making it possible to travel at either slow or fast speeds as desired. Note the ease with which the leads may be lowered in order to bring the equipment within standard railroad clearances. The "No. 12" is one of four standard railroad pile drivers manufactured by this company. Our line is broad and covers a wide range of requirements.

THE McMYLER INTERSTATE COMPANY

1756 Hudson Terminal Building
NEW YORK CITY

CLEVELAND, OHIO
BRANCH OFFICES:

812 Edison Building
CHICAGO, ILLINOIS



INDUSTRIAL *Railroad Type* PILE DRIVERS



THE fundamental requirement of a pile driver is that it drive piles with dispatch, either close to the machine, on either side of the track, or at varying distances ahead of the driver, and, when desired, drive battered piles. In addition it should be self-propelling and have the power and speed to act as a locomotive in handling loads to and from sidings. Its propelling mechanism must also permit of easy arrangement for transportation in regular freight trains.

INDUSTRIAL WORKS pile drivers satisfy these requirements. Many years of experience in this field have proved the features essential for efficient operation and these are incorporated in all of our drivers.

INDUSTRIAL pile drivers are of steel construction throughout and they are designed for the hardest service. The car bodies are of open hearth steel and they have spring draft rigging, automatic couplers and all A.R.A. requirements. Complete air brake equipment is provided under the control of the engineer, with air brakes connected to each truck. The construction of both the engine and the boiler embodies the best features of modern practice. The self-supporting leaders may be raised or lowered in a few seconds and they are adapted for use with either a drop hammer or a steam hammer.

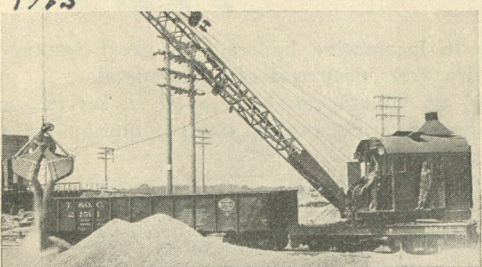
An INDUSTRIAL pile driver is the development of the best railroad practice—correct in design, sturdy in construction and efficient in operation.

INDUSTRIAL WORKS • BAY CITY • MICHIGAN



Hayward Buckets

1925



Handling road ballast

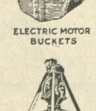
Used for loading and unloading ballast material, Hayward Buckets reduce labor costs and help cut the time needed for "laying to" on the main track.

Ever-ready—fast action—endurance—these qualities are demanded of men and tools alike—for all forms of work encountered in railroad operation. They are common attributes of all Hayward Equipment.

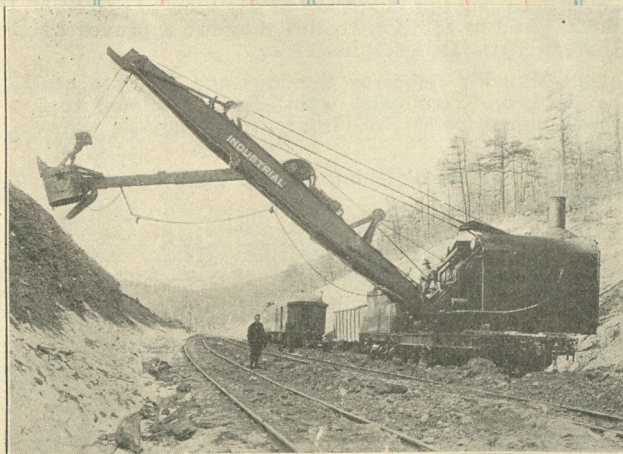
Send for Railroad Bulletin 618.

THE HAYWARD COMPANY
46 Dey St., New York, N. Y.

Builders of Clam Shell, Orange Peel, Drag Line and Electric Motor Buckets; Dredging, Excavating



and Coal Handling Machinery; Automatic Take-Up Reels; Counterweight Drums. 3245-Y



INDUSTRIAL CONVERTIBLE CRANE STEAM SHOVEL

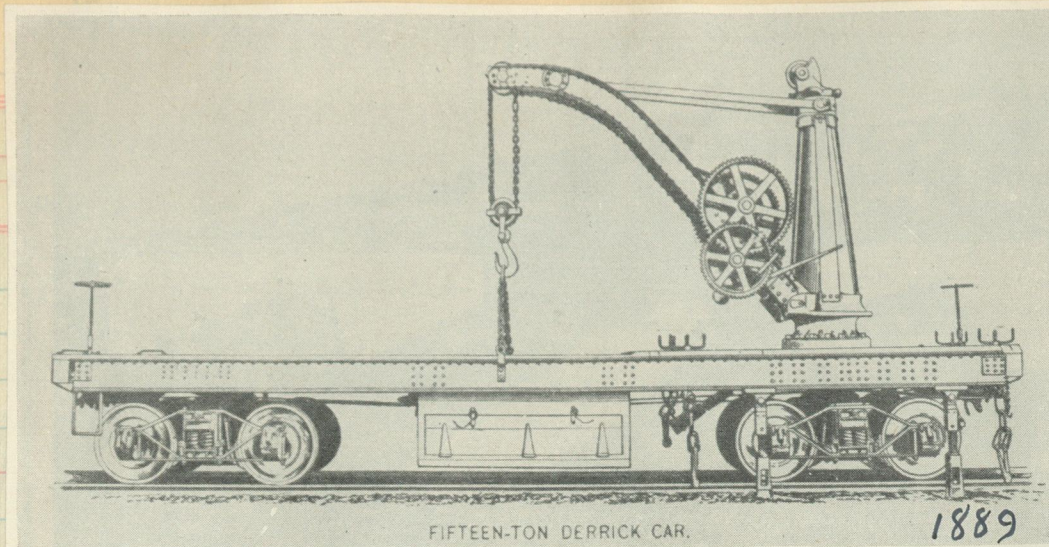
Combines the functions of a locomotive crane and a steam shovel.

AS A STEAM SHOVEL is equipped with 1½ cu. yd. dipper, 40-ft. boom, crowding engines. AS A LOCOMOTIVE CRANE with 50-ft. boom for operating with clam shell or drag line bucket, magnet, or hook and block. With leads is readily convertible for pile driving.

You can't beat an INDUSTRIAL

INDUSTRIAL WORKS
BAY CITY NEW YORK CHICAGO PHILADELPHIA MICHIGAN DETROIT

1873 1923
Sales Engineers in All Principal Cities
BUILDERS OF CRANES AND PILE DRIVERS FOR 50 YEARS



FIFTEEN-TON DERRICK CAR.

1889



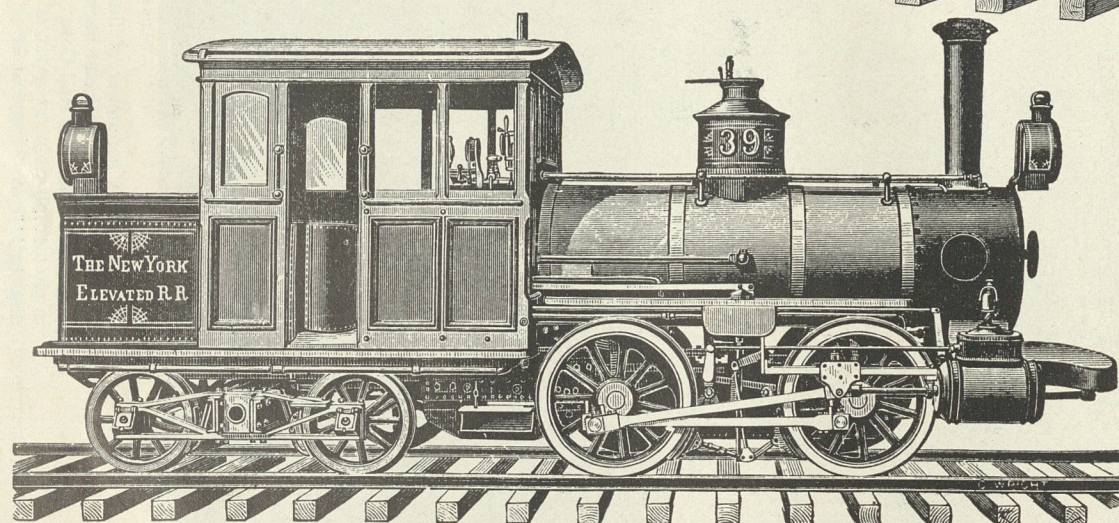
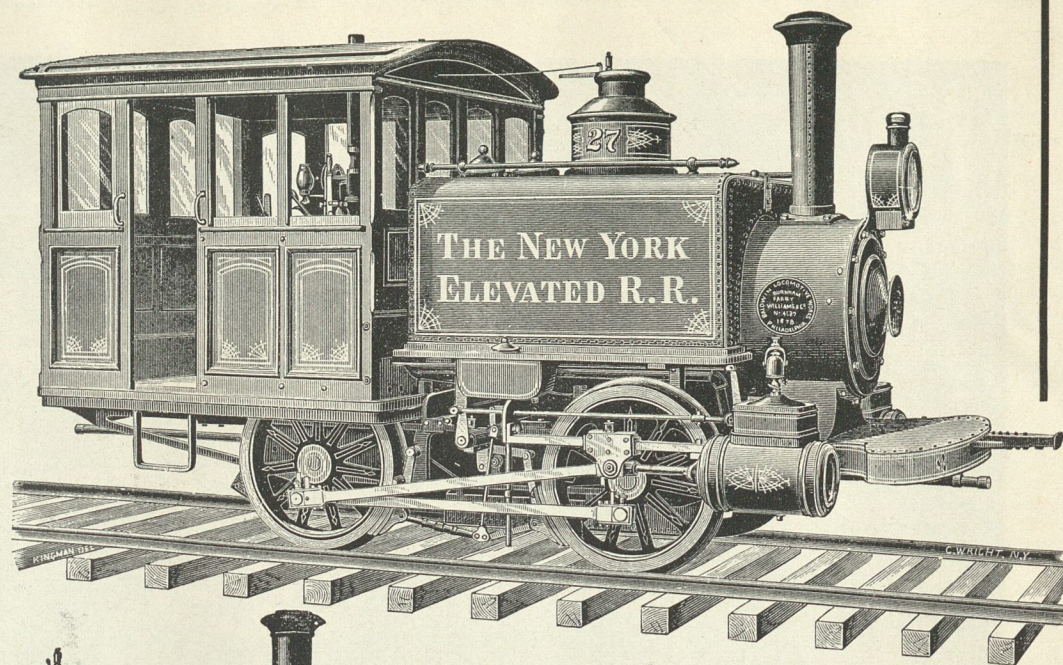
THE STEAM SHOVEL, THE RAILWAY BUILDERS' MOST SERVICEABLE TOOL. Few devices have facilitated and expedited railway construction so much as the steam navvy, which is capable of removing three or more tons of spoil at a time



SPECIAL ORDER: Ohio Locomotive Crane hadn't turned out a steam rig in almost a decade when Southern ordered 25-ton, EA-model LC-35. Cost: \$29,000. Ohio's last steam-powered crane, the streamlined unit was shipped January 14, 1949. Only the stack revealed crane's source of power.

Old El Locomotives.

Time was, back in the 1870's, when the elevated railroad, so much disparaged of late, was a shiny new and popular method of rapid transit, even though steam engines were then the motive power. The New York Elevated Railroad Company at first tried four-wheeled locomotives, but on its reorganization and extension in 1879 bought an order of both types shown on this page. A second order was of both types, but by then the eight-wheeled Forney (below) had shown its superiority for el service and future orders were for Forneys alone. They ran around reverse curves of 119-foot radius hundreds of times a day and were eventually to operate exclusively a line with (then) more trains over it than any other in the world. Both locomotives shown are Baldwins, although Rhode Island also built some of the elevated engines.

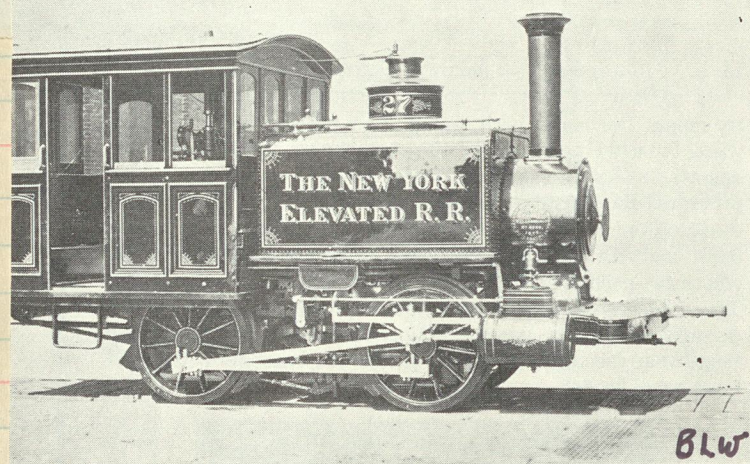
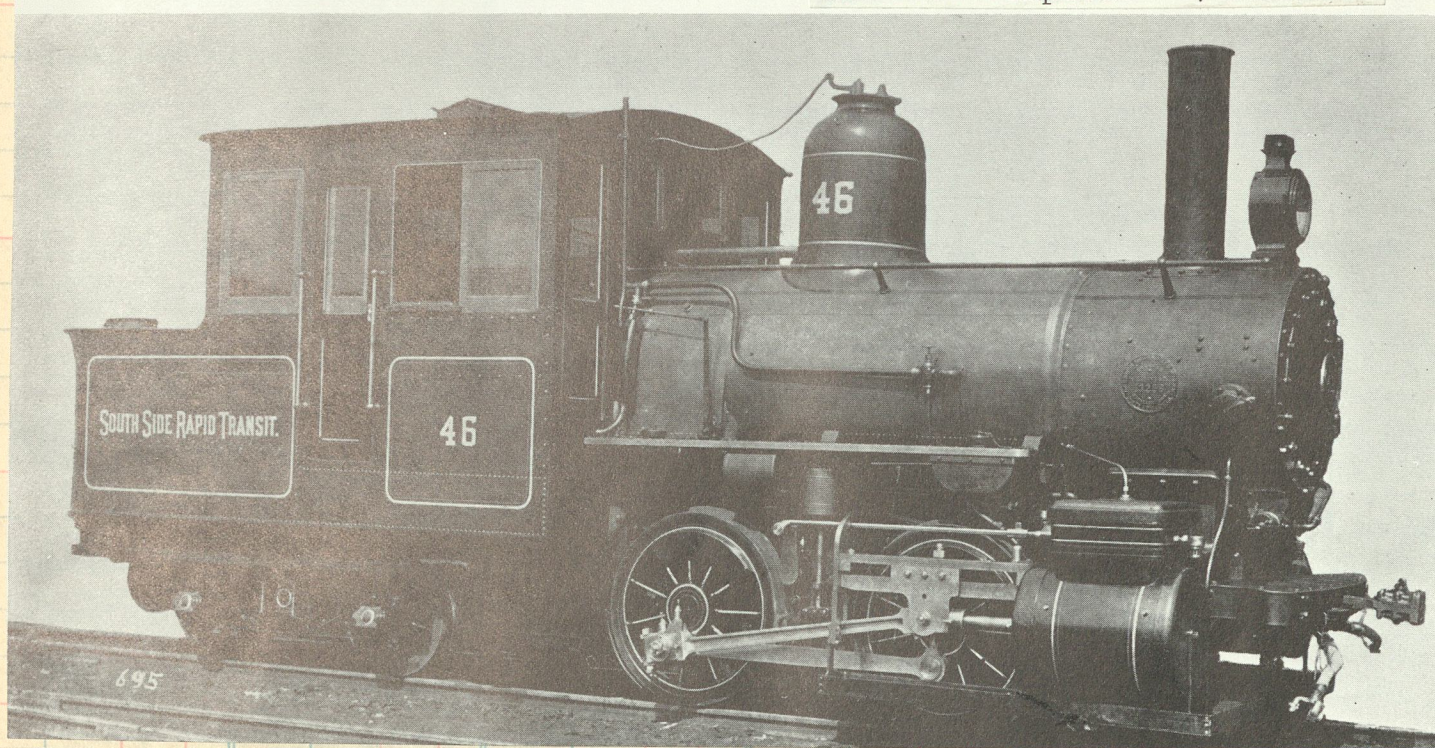


Collection of T. W. Harron, 2070 Bryant St., San Francisco, Calif.

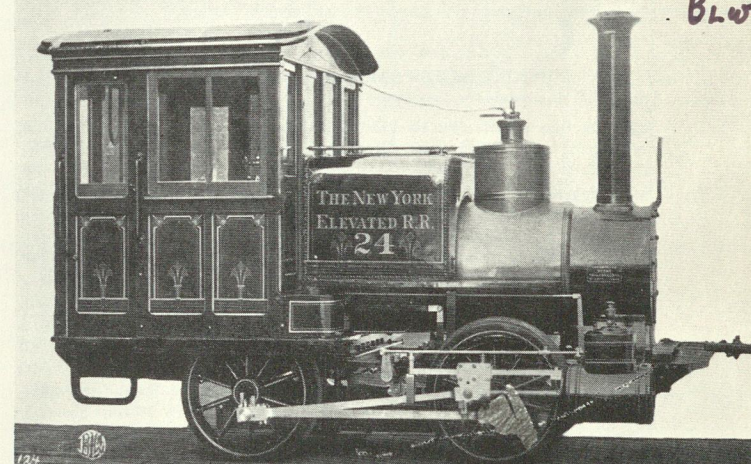
Specifications:

Wheel arrangement.....	0-4-0	0-4-4
Cylinders, diam., stroke.	10" x 14"	10" x 14"
Drive wheel diameter....	38"	38"
Driving wheelbase.....	6'-0"	5'-0"
Weight of engine, loaded.	23,740 lbs.	29,890 lbs.
Weight on drivers.....	23,740 lbs.	19,170 lbs.
Diameter of boiler.....	34"	34"
No. of 1½" boiler tubes.	100	100
Grate area.....	-----	10.2 sq. ft.
Sq. ft. of heating surface.	-----	296.5
Cap. of tank, water.....	-----	450 gals.

PROBABLY ONE OF THE LAST STEAM ENGINES built for rapid transit elevated service, No. 46 of the South Side (Chicago) Rapid Transit was built in 1893. (Collection of C. A. Brown) Baldwin compound c/n 13259

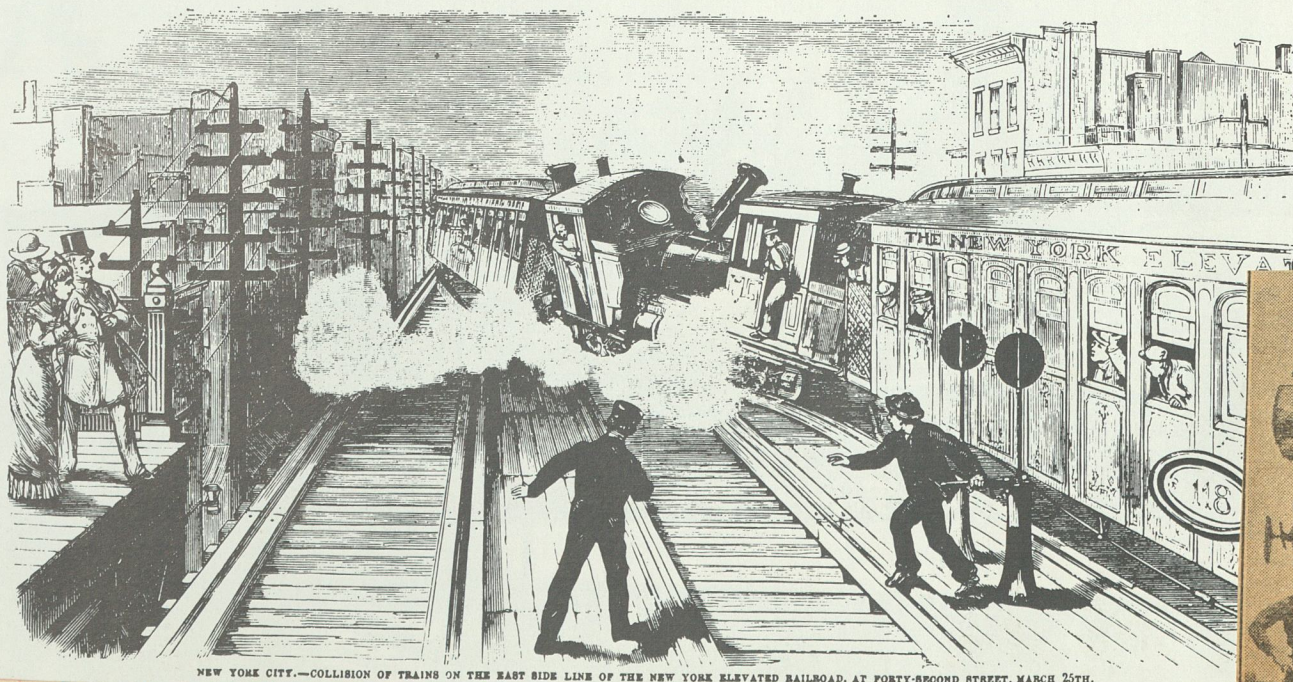


NEW YORK ELEVATED'S No. 27 built in 1878, is somewhat larger in all dimensions than No. 24. (Collection of C. A. Brown)



NEW YORK ELEVATED R.R. No. 24 was a tiny engine for standard gauge tracks. Built in 1878. (Collection of C. A. Brown)

A MISPLACED SWITCH on the New York City Elevated Railroad caused these trains to ram together on March 25, 1879, at the 42nd Street Station. Collection of the Library of Congress



NEW YORK CITY.—COLLISION OF TRAINS ON THE EAST SIDE LINE OF THE NEW YORK ELEVATED RAILROAD, AT FORTY-SECOND STREET, MARCH 25TH.

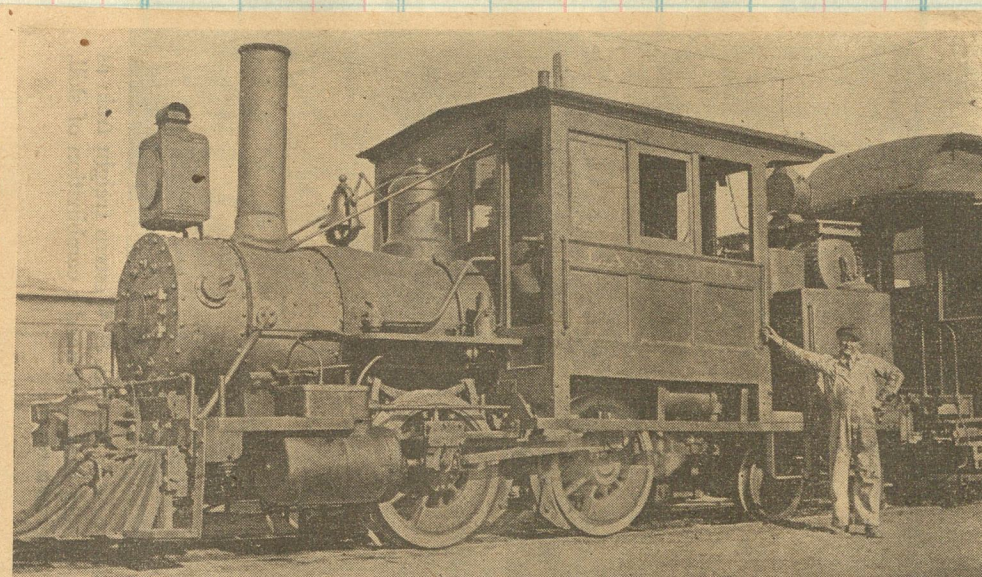
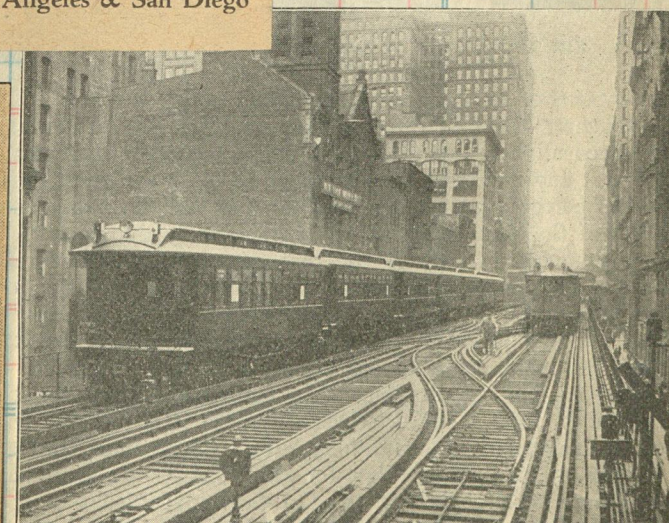
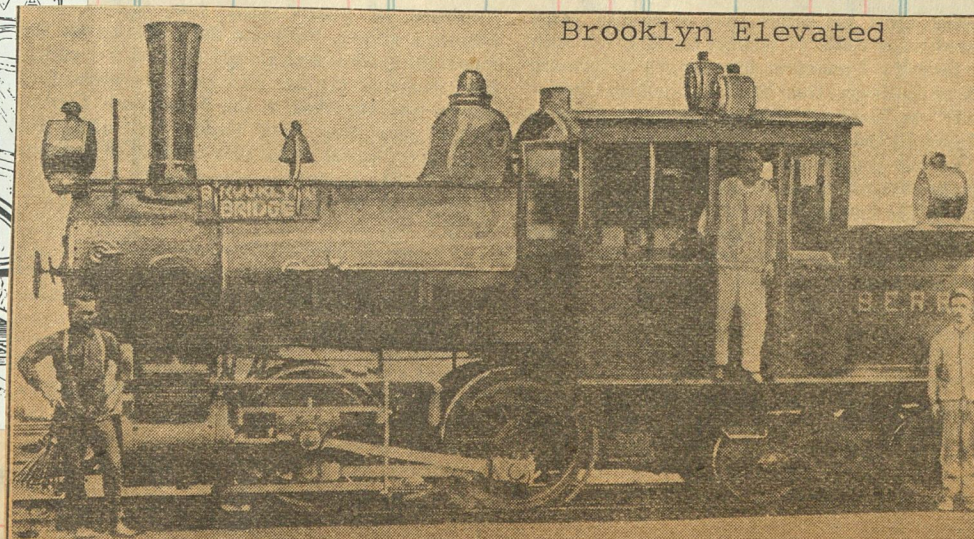


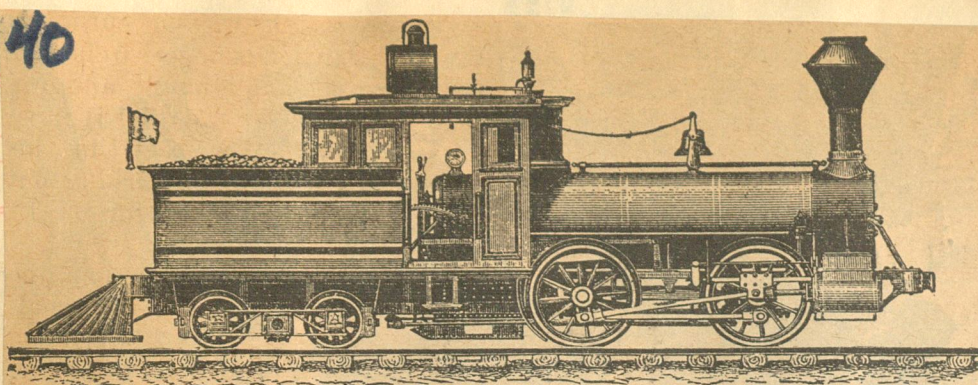
Photo from R. P. Middlebrook, San Diego, Calif.

VETERAN of the New York Elevated, this engine was photographed at San Diego, Calif., in 1917, when she was No. 1 on the now defunct Los Angeles & San Diego Beach Railway

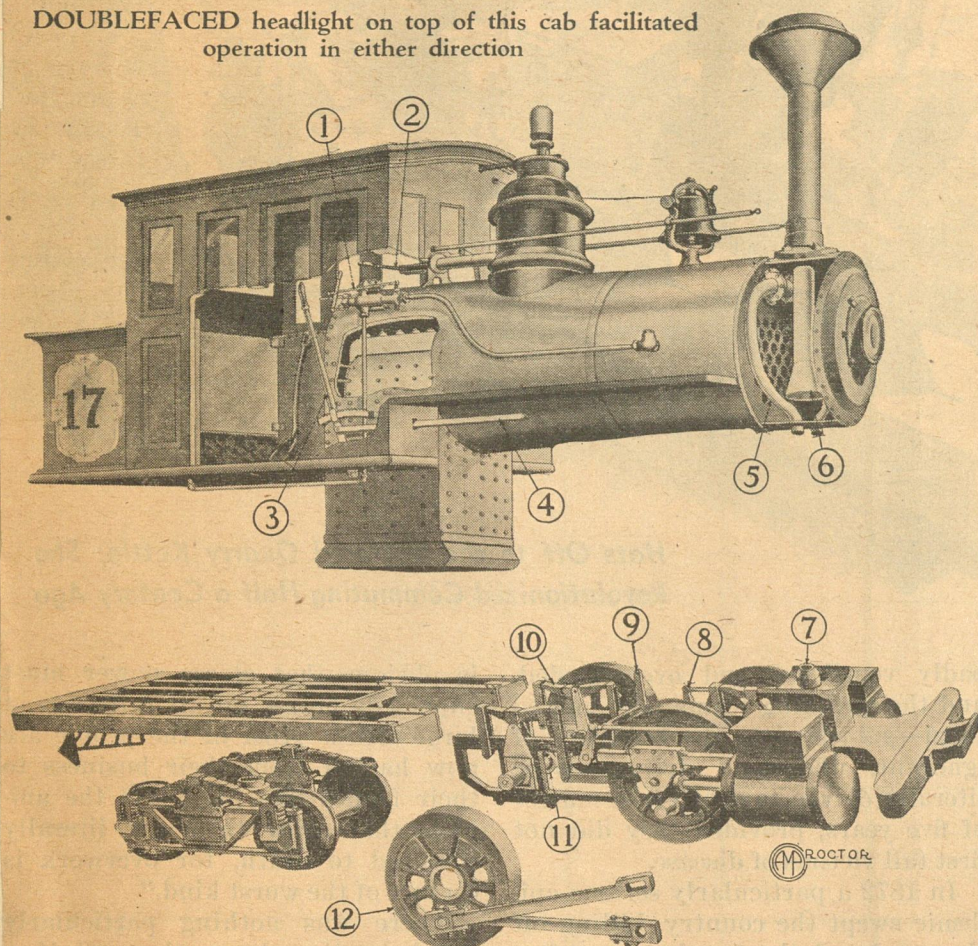


P. & A.

A Train of the Brightly-Painted "Goldenrod Orange" Car in New York Which Are Attracting Passengers to the Interborough Rapid Transit's Elevated Lines

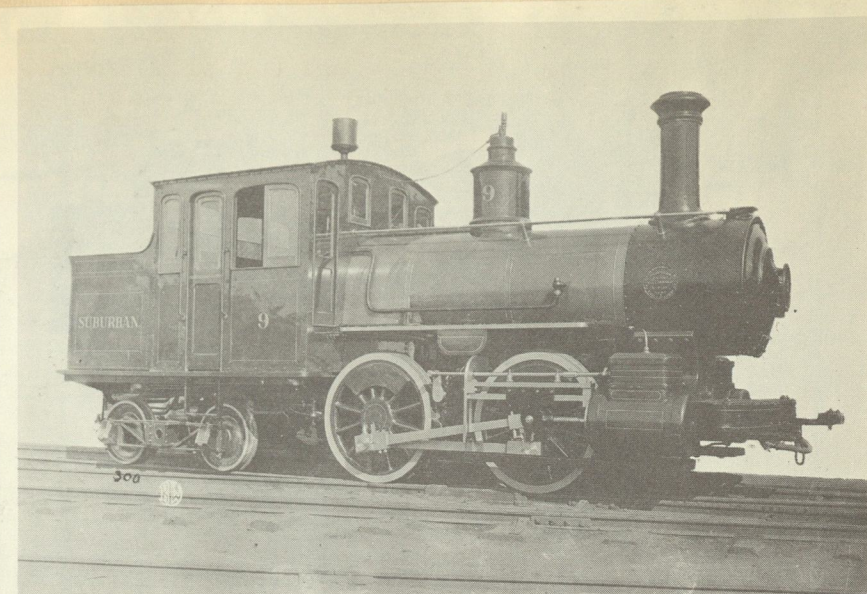
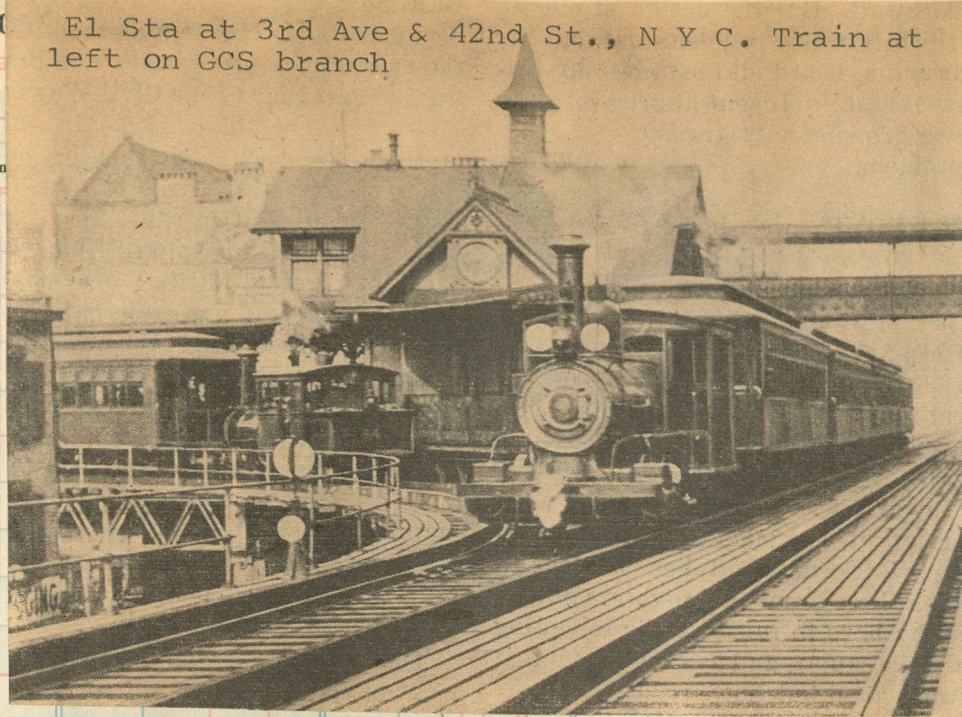


DOUBLEFACED headlight on top of this cab facilitated operation in either direction

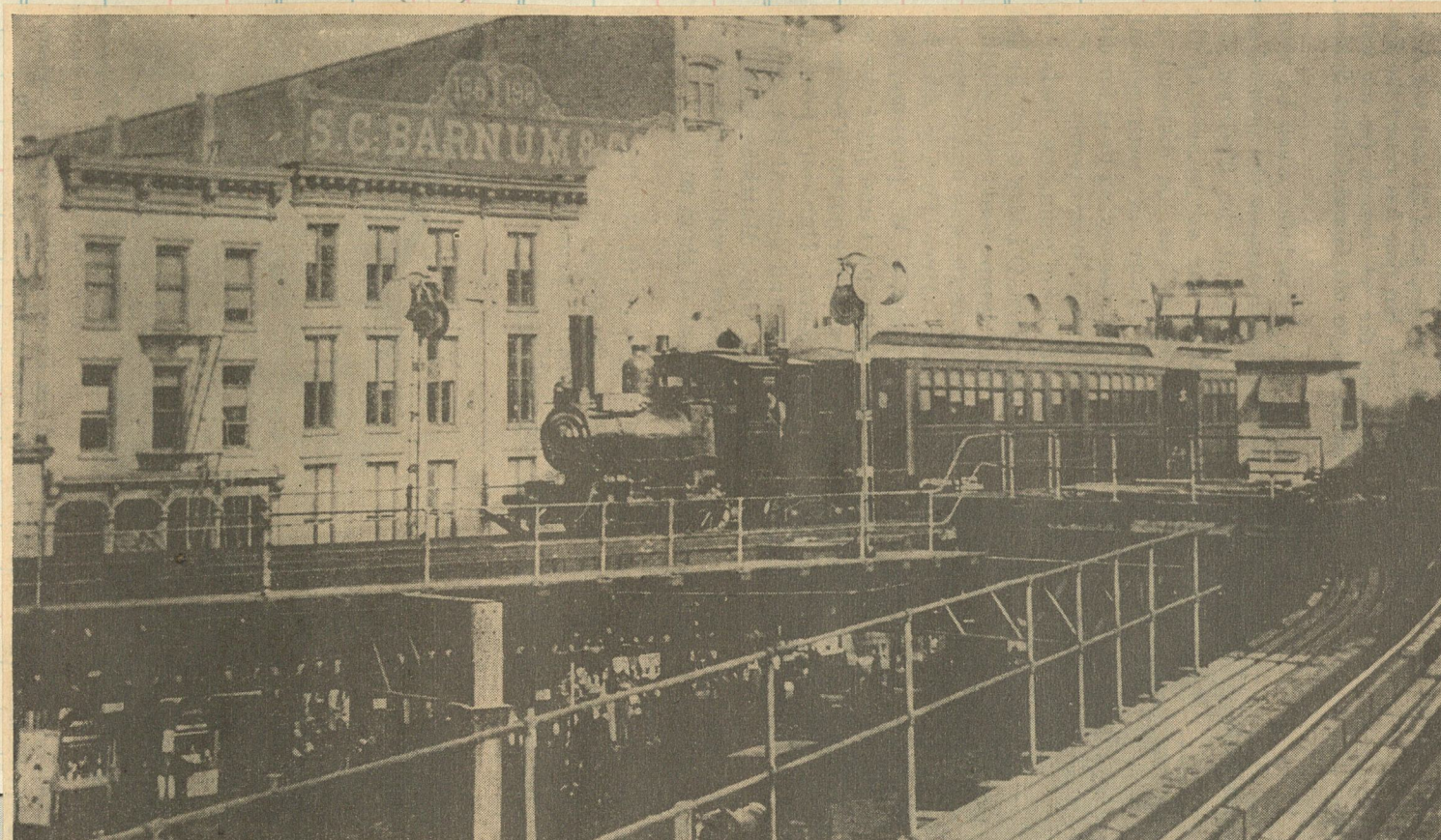


CUTAWAY DRAWINGS show details in construction of a Forney locomotive: (1) injector, (2) lifting type, (3) throttle, (4) reverse lever, (5) reach rod, (6) steam pipe, (7) petticoat pipe, (8) exhaust nozzle, (9) rocker arm and valve stem, (10) lift shaft arm, (11) driver spring assembly—spring hanger and saddle, (12) eccentric, (13) main driver with blind tire, main rod and connecting rod

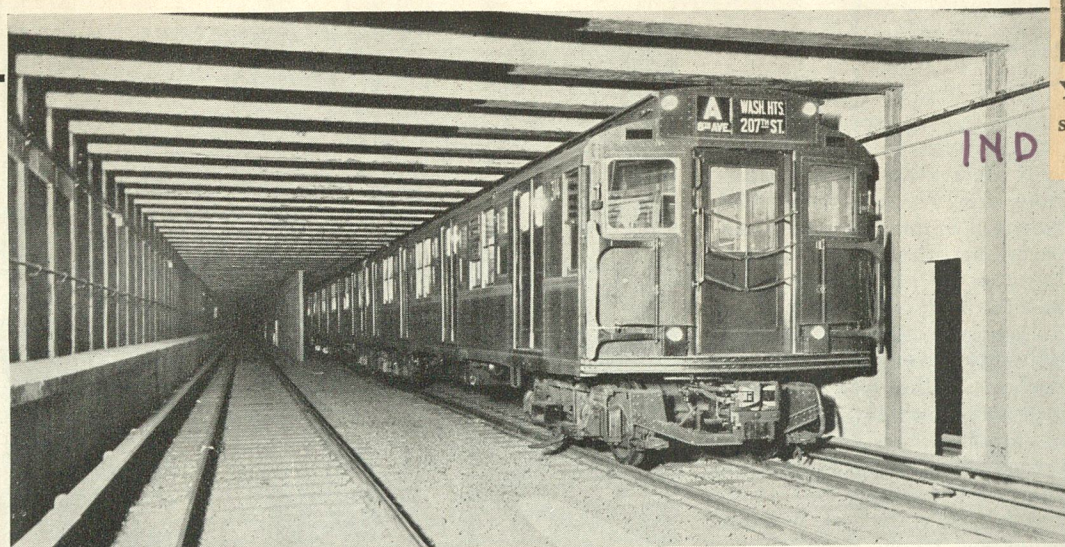
El Sta at 3rd Ave & 42nd St., N Y C. Train at left on GCS branch



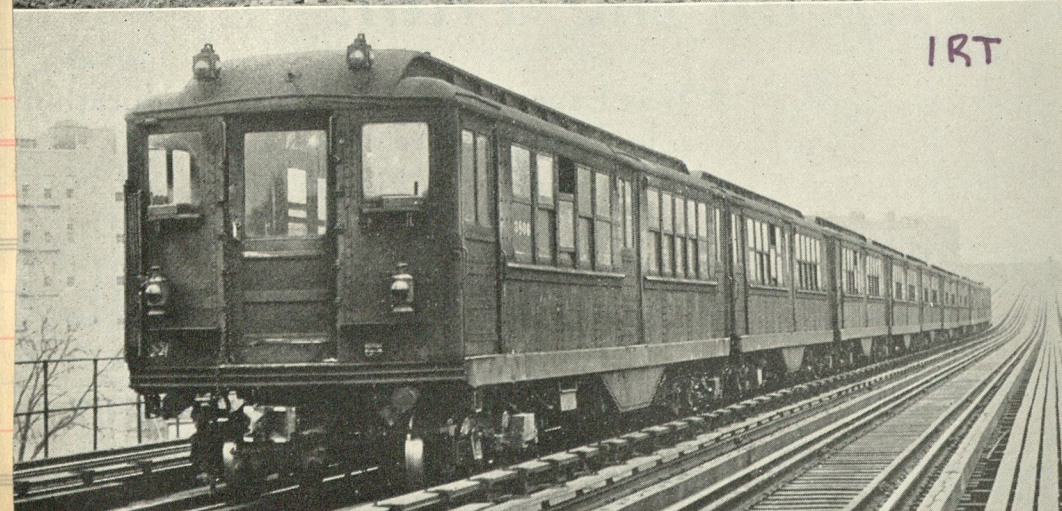
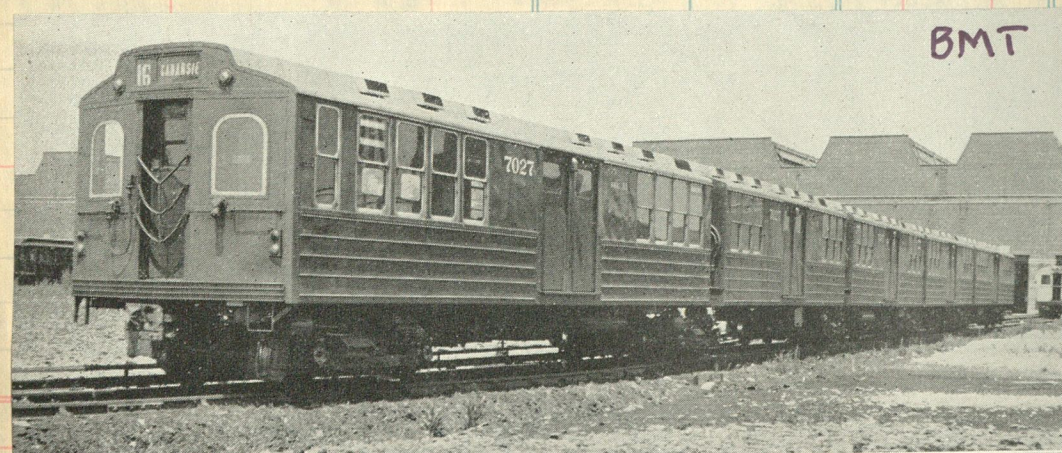
Suburban Rapid Transit #9, 1886, 0-4-4T type. Baldwin c/n 8167



YOU GET OFF HERE TO VISIT CHINATOWN. Chatham Square, junction point of two old elevated lines in the drab and fusty section of downtown New York, hasn't changed a great deal since the era, more than four decades ago, when Forney's little giants serenely puffed their way above horse-drawn traffic in city streets that were darkened by the "el" structures



Independent Division, Eighth Avenue express northbound beyond Columbus Circle. Courtesy New York City Transit System.



Subway Jackpot

Editor of TRAINS:

THREE thousand six hundred passengers a minute, 24 hours a day, seven days a week, are carried on a 245-mile railroad. That is the story of the most amazing of all city-owned railroads—the New York City Transit System, a must-see for the city's visitors, one of Fred Allen's most popular radio subjects, and just the "subway" to New Yorkers.

Three distinct railroads were merged two years ago to make up the present city-owned system. Here is an outline of (1) the construction and (2) the operation of its three divisions: Interboro (IRT Division), Brooklyn-Manhattan (BMT Division), and Independent (IND Division).

Construction.

Capital investment: \$1,500,000,000 (all three divisions).

Oldest trackage still in operation: City Hall to Broadway and 145th Street via Fourth Avenue and 42nd Street. Opened October 24, 1904 (IRT Division). [BMT Division on Fourth Avenue, Brooklyn, opened 1907 and 1908; IND Division on Eighth Avenue, Manhattan, opened 1932.]

Oldest trackage (now dismantled): Sixth Avenue (elevated), opened 1878. Steam power used until 1903. Removed in 1939. (IRT Division). [IRT Division also removed els on Ninth Avenue and Second Avenue, Manhattan; BMT Division also removed els on Fulton Street and Fifth Avenue, Brooklyn.]

Newest trackage in operation: Eighth Street to 53rd Street via Sixth Avenue, opened December 15, 1940. Cost, \$60,000,000. 2½ route miles at \$24,000,000 per mile. 5 stations (IND Division).

Present construction: Rockaway Avenue to Drew Street via Fulton Street and Pitkin Avenue, Brooklyn. Opens 1943, war permitting. Cost, \$47,000,000. 3.4 route miles. 6 stations (IND Division).

Proposed post-war construction: 107 route miles (86 miles underground), 196 stations (159 underground). Cost, \$980,000,000 estimated in 1939 (all three divisions).

Present route mileage: 245.6 miles (of which 133 are underground, composed of approximately 43 miles double track, 11 miles three tracks, and 79 miles four tracks).

Rail base, highest and lowest track: elevation +161 feet in 175th Street Station, Manhattan (IND Division); elevation -113 feet in 60th Street tunnel between Manhattan and Queens (BMT Division).

Tunnel types: (1) Cut-and-cover (square cross-section) most popular. Minimum headroom from rail base is 13'-2". Minimum width on straight track is 13'-6". (2) Pressure tunneling (round cross-section), only for sand and under water. Diameter 18 feet at outside edge of tube.

Road: Maximum grade, 4 per cent; usual, 3 per cent. Maximum curve, 500-foot radius; usual, 2500-foot radius. Rails are 100-pound per yard, 100 feet long. Ballast track (on Independent Division) only at switches and crossovers. Cement-impregnated ties 6" x 10" x 30", allowing 30" safety and drainage ditch between rails. Crossings at grade largely eliminated by flexing of tracks on the newer lines. Three-color automatic block system signals throughout the entire system combined with automatic trip. All switching handled by interlocking machines and model boards. Construction time is three to five years per section.

Largest Stations.

Underground, Manhattan:

Times Square (IRT and BMT Div.)

13 tracks, 4 levels, 8 platforms

Canal Street (IRT and BMT Div.)

12 tracks, 4 levels, 8 platforms

Union Square (IRT and BMT Div.)

10 tracks, 3 levels, 5 platforms

Grand Central (IRT Division)

9 tracks, 3 levels, 6 platforms

West Fourth Street (IND Division)

8 tracks, 2 levels, 4 platforms

Columbus Circle (IRT and IND Div.)

8 tracks, 2 levels, 5 platforms

Herald Square (BMT and IND Div.)

8 tracks, 2 levels, 4 platforms

145th Street (IND Division)

7 tracks, 2 levels, 4 platforms

Fulton Street (IRT, BMT and IND Div.)

8 tracks, 5 levels, 6 platforms

Chambers Street (BMT Division)

6 tracks, 1 level, 5 platforms

Underground, Brooklyn:

DeKalb Avenue (BMT Division)

6 tracks, 1 level, 2 platforms

Hoyt Street (IND Division)

6 tracks, 1 level, 4 platforms

Above Ground, Brooklyn:

Coney Island (BMT Division)

10 tracks, 1 level, 8 platforms

Above Ground, Queens:

Queens Plaza (IRT and BMT Div.)

8 tracks, 2 levels, 4 platforms

Operation.

Equipment: 6800 passengers cars. IRT Division

cars 51 feet long with 44 seats (10-car trains). BMT

Division cars 67 feet long with 78 seats (eight-car

trains). IND Division cars 65 feet long with 56

seats (10-car trains).

Stations: 519, of which 274 are underground.

Platforms, IRT Division, from 300 to 500 feet long;

BMT Division, 540 feet long; IND Division, 660 feet

long.

Passengers: 1,892,000,000 yearly; 5,800,000 weekday

average to about 2,500,000 Sunday and holiday

average. Approximately 25 per cent weekday average

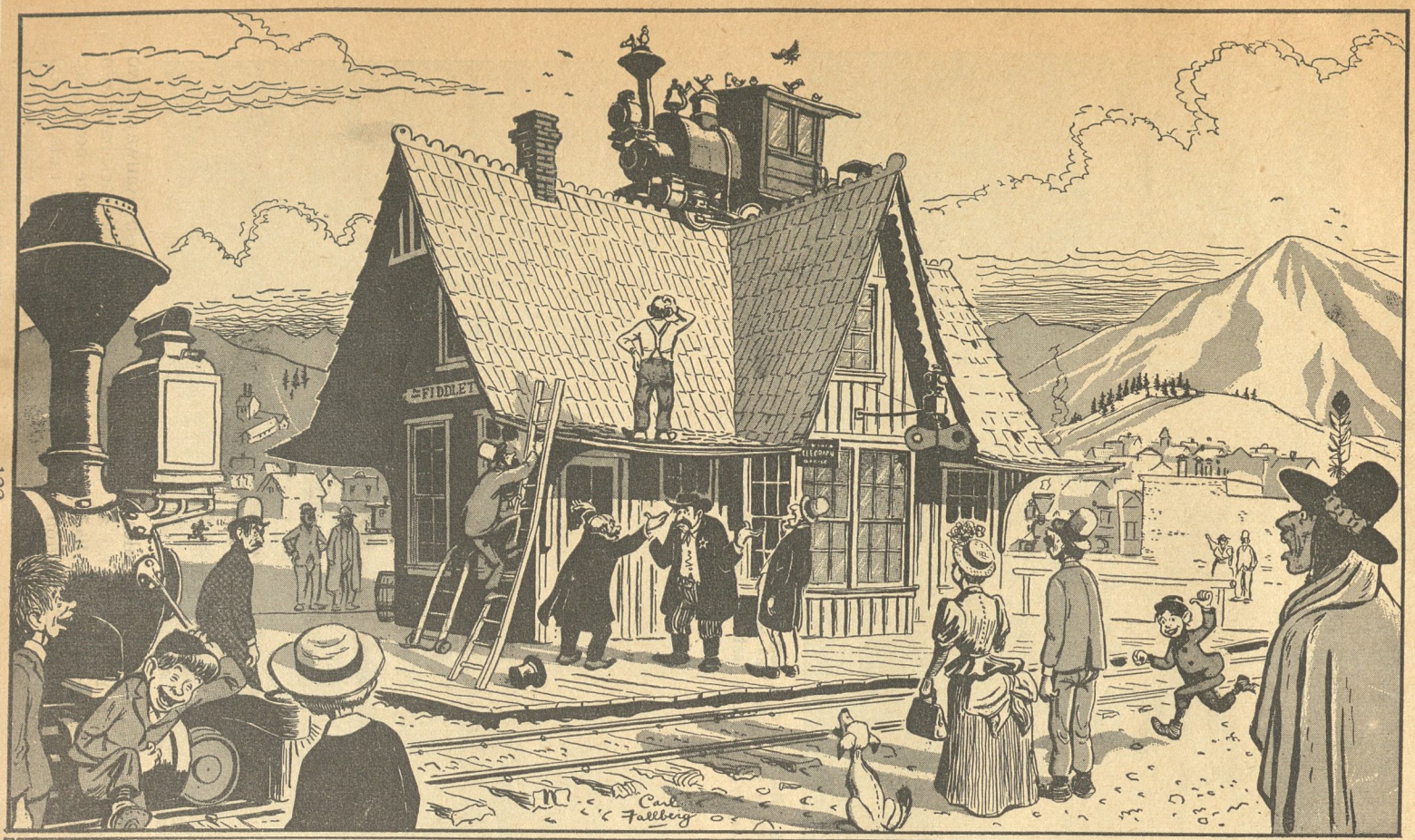
carried in mornings between 8 and 9 and 30

per cent weekday average in evenings between 5

and 6. During rush hours all trains operate

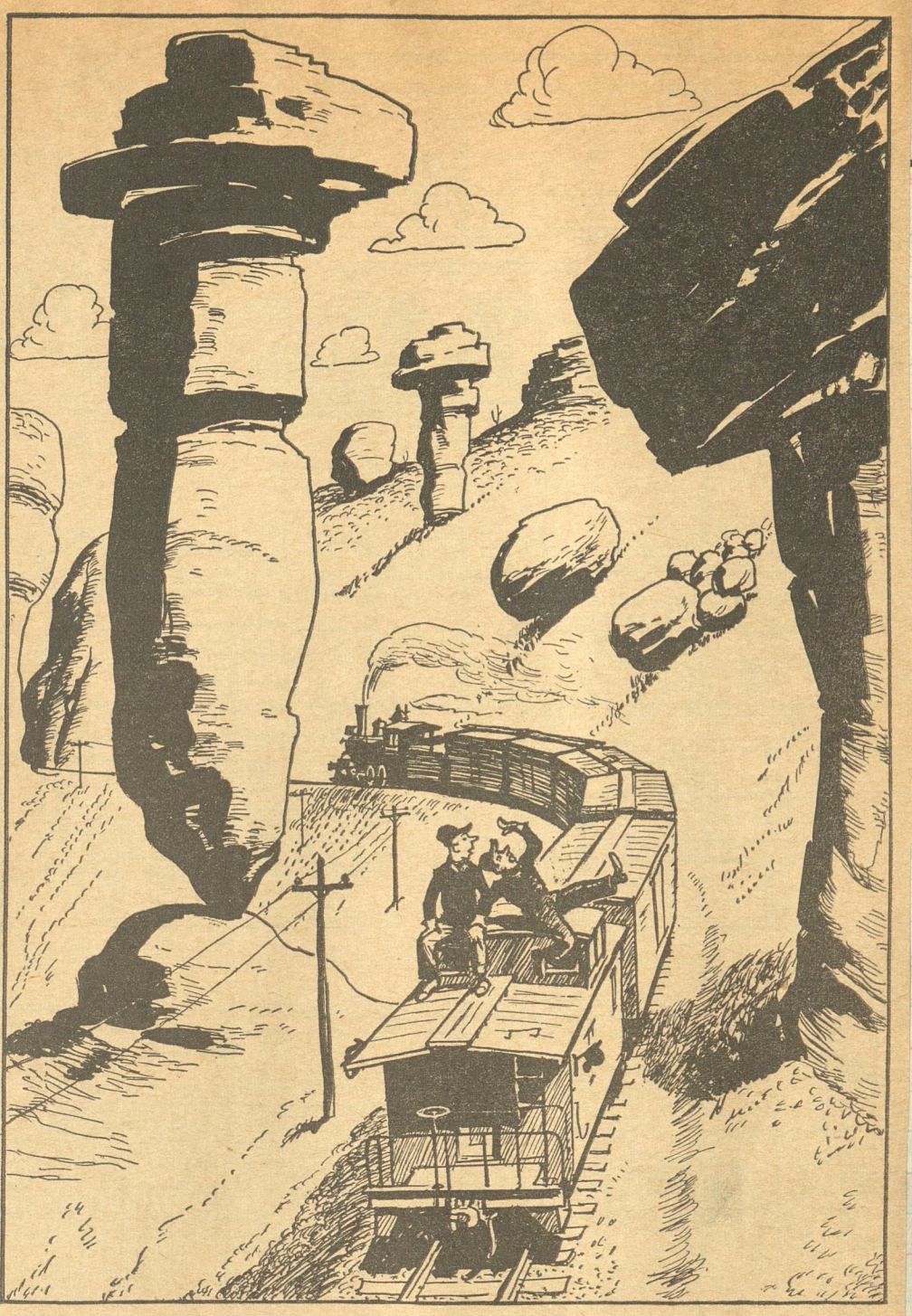
on a 90-second headway.

Clos. No. Sold

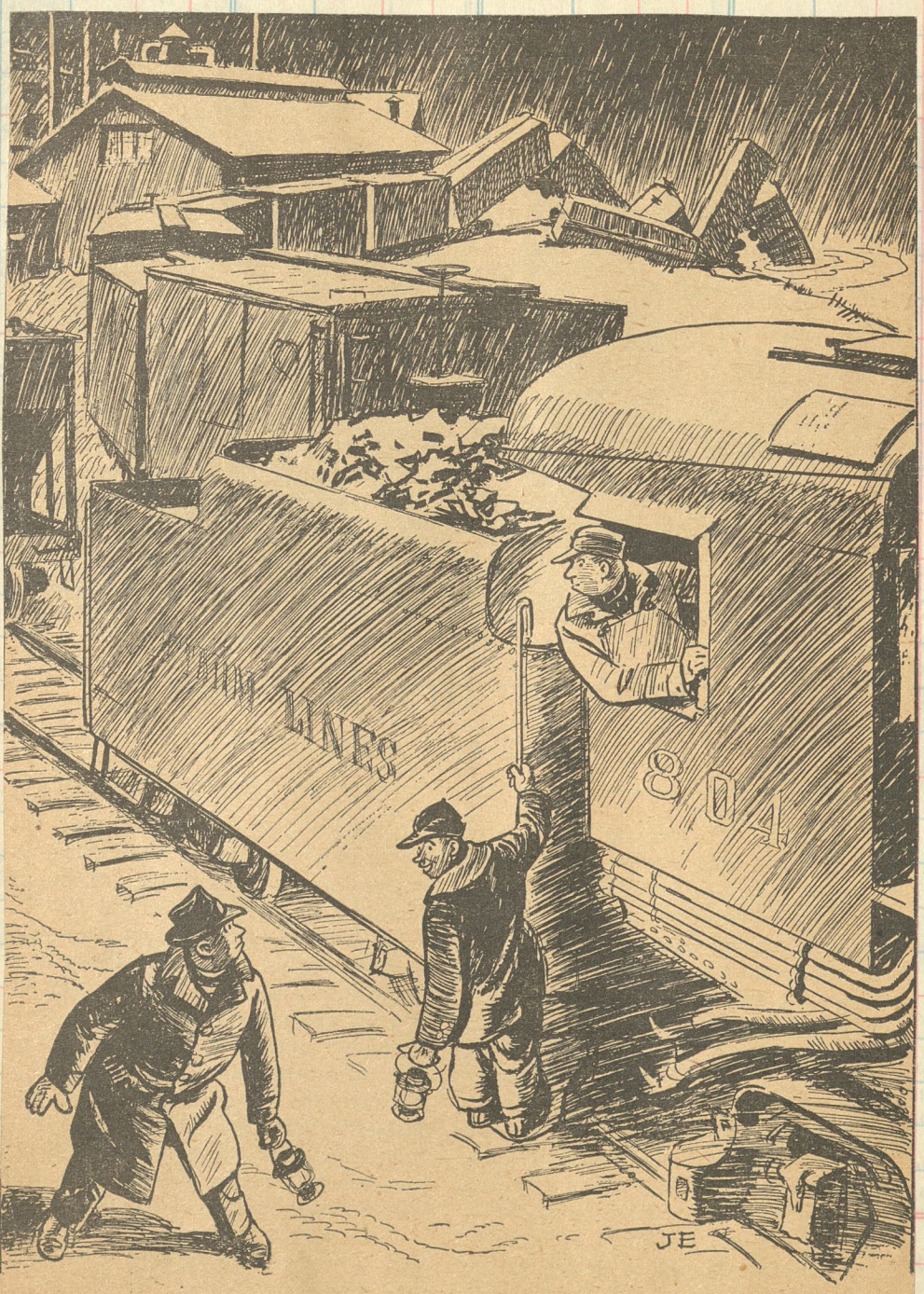


FIDDELTOWN & COPPEROPOLIS RY. No. 52 Momentous Question the Morning after Halloween: Who Put the Yard-Goat on the Depot Roof? by Carl Fallberg

ATIC
id Amount



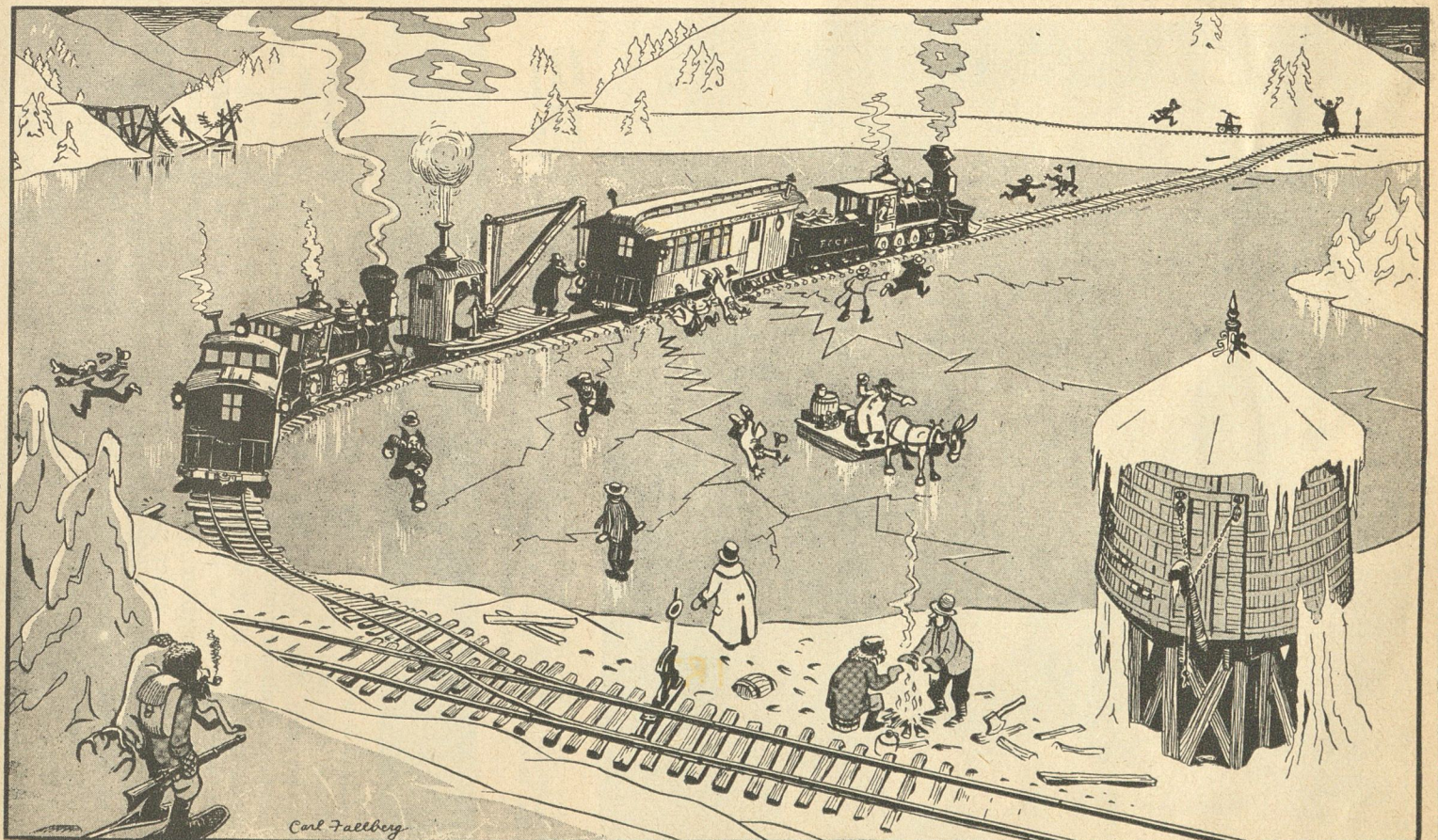
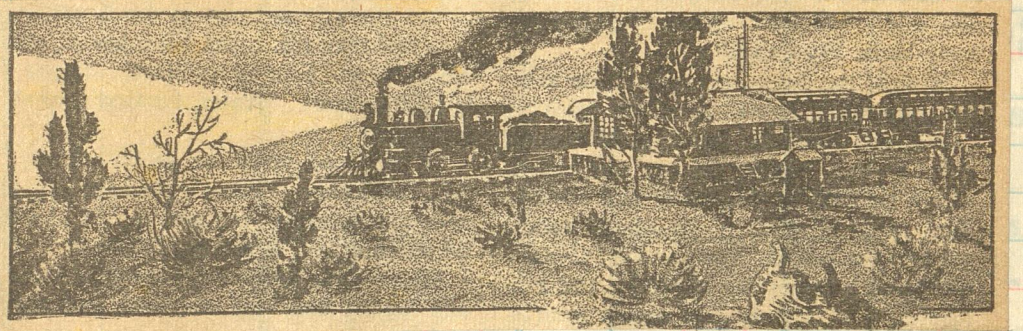
NOT ON THE WHEEL REPORT JOE EASLEY
"You'll get used to it—they seldom fall down!"



Not in the Wheel Report By JOSEPH EASLEY
"It was a little crowded but we shoved all them empties onto the Mill Spur."



S'MATTER, DIDN'T YOU EVER SEE AN UMBRELLA?

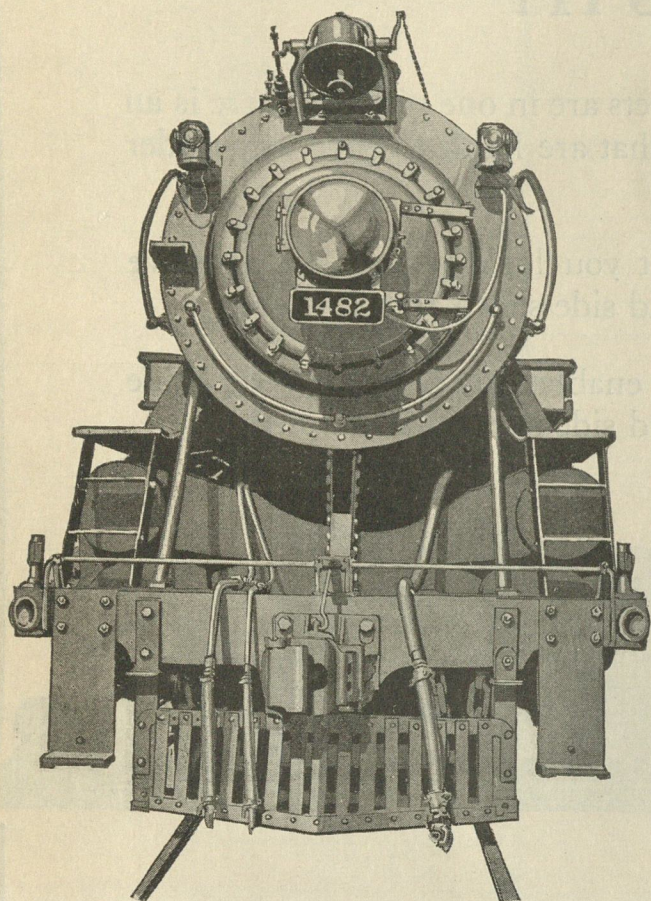


FIDDELTOWN & COPPEROPOLIS RY. No. 30 No Time to Spare! F&C Hook Gets Set to Hoist Combine from Overtaxed Shoo-fly at Lizard Lake by Carl Fallberg

ERE
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heet

BALDWIN

Let us help you
solve your power problems

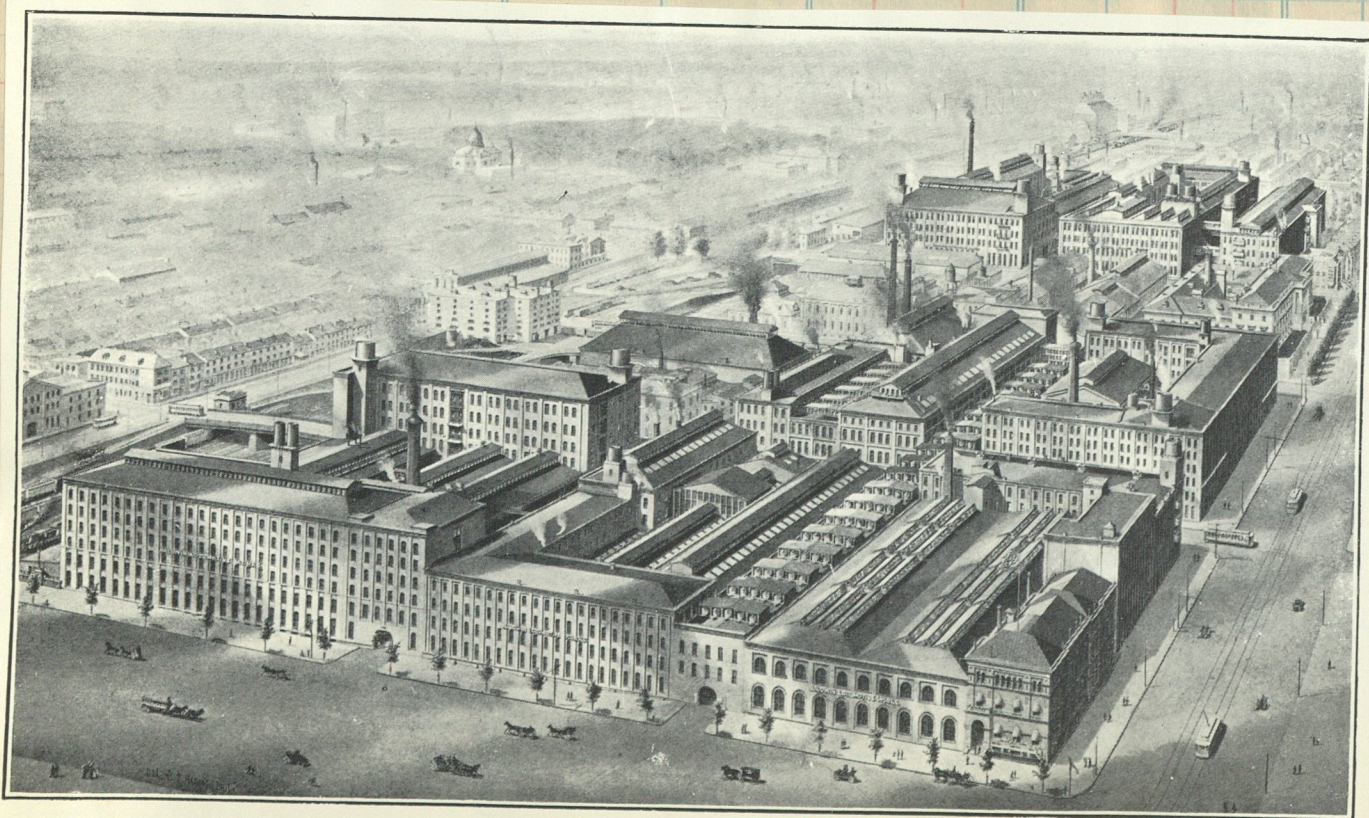


MAY we suggest that you make an early determination of your motive power requirements, so that we can give the most prompt and satisfactory service if favored with your order.

THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA, PA.

LOCOMOTIVES

The Baldwin Locomotive Works



Birdseye View of The Baldwin Locomotive Works—Philadelphia Plant

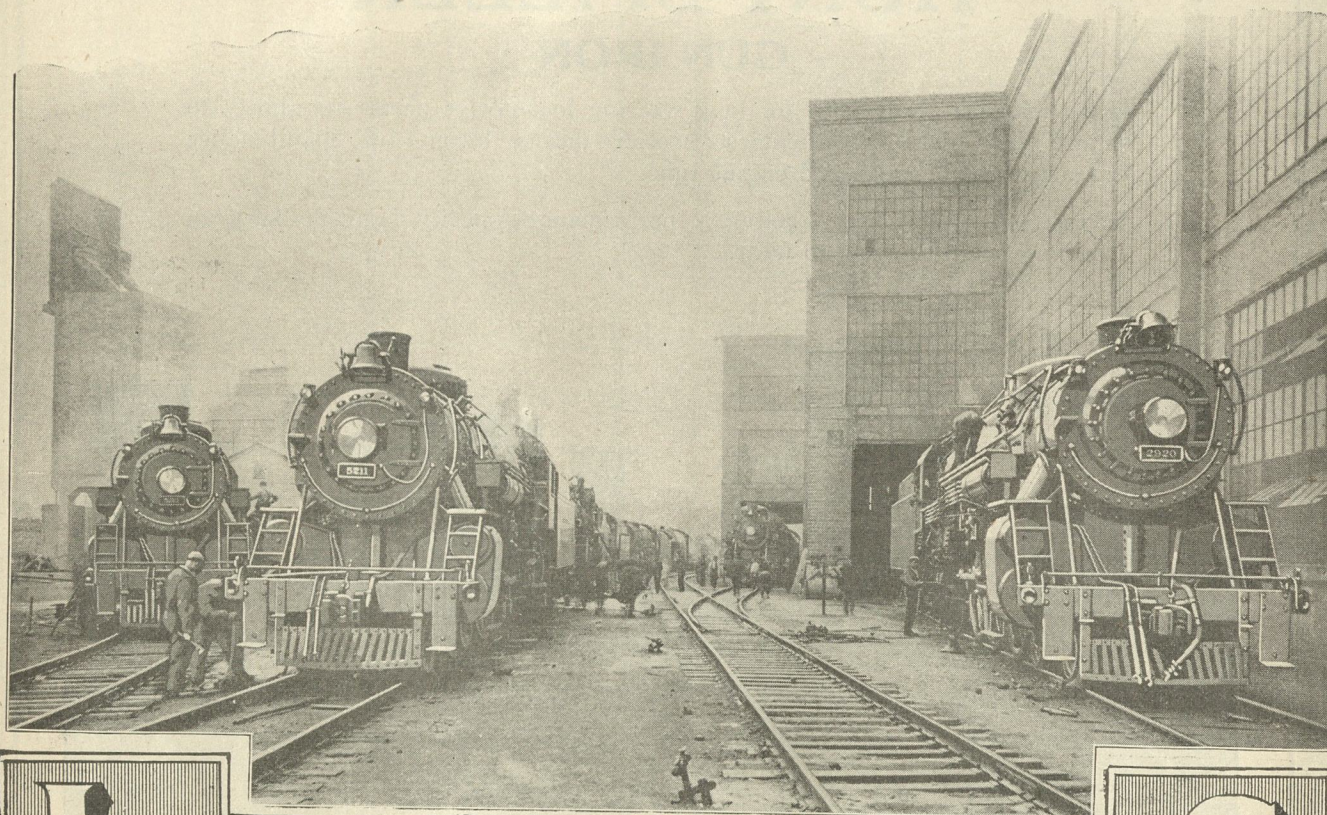
BALDWIN

THE STANDARD OF
EXCELLENCE IN LOCOMOTIVES

TO be of the greatest value to any railway, a locomotive must be well adapted to the service for which it is intended. This means that in addition to being properly designed and equipped, it must be accurately built of the most reliable material.

Skill and experience are essentials in the designing of a modern locomotive, and the highest type of plant and the most up-to-date equipment are necessary to produce it. Baldwin Service offers all this to any railway, in addition to that individual attention which guarantees satisfaction.

THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA



LOCOMOTIVES

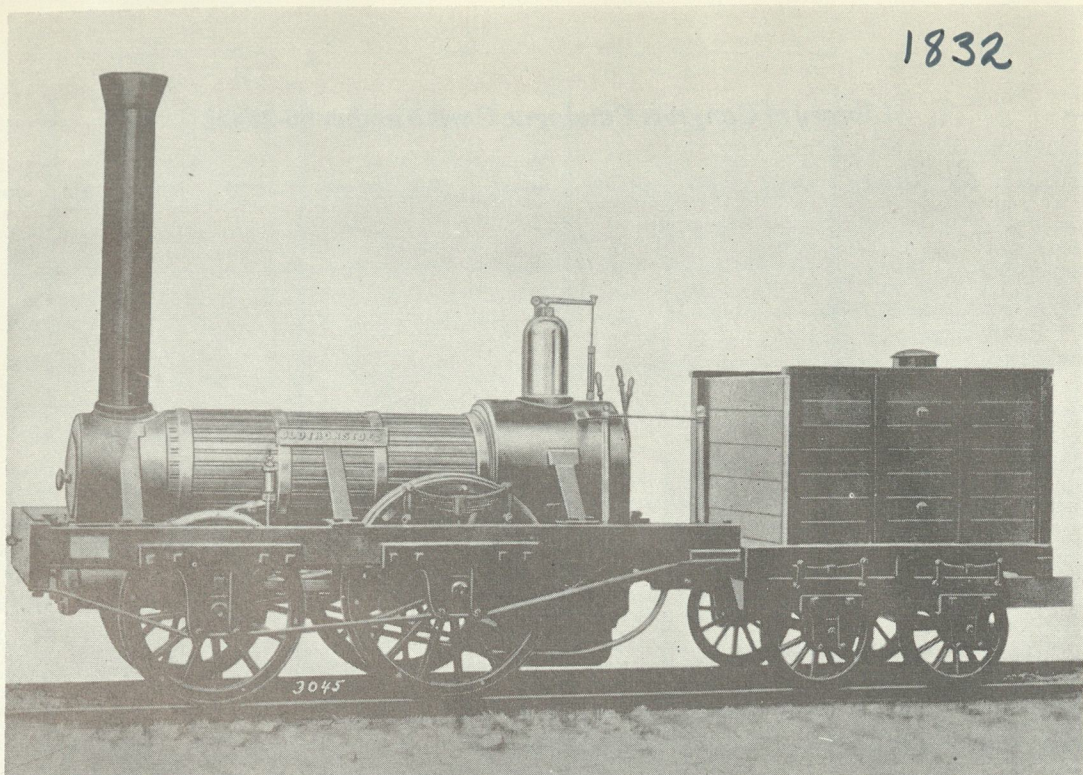
The first shop on Lodge Alley



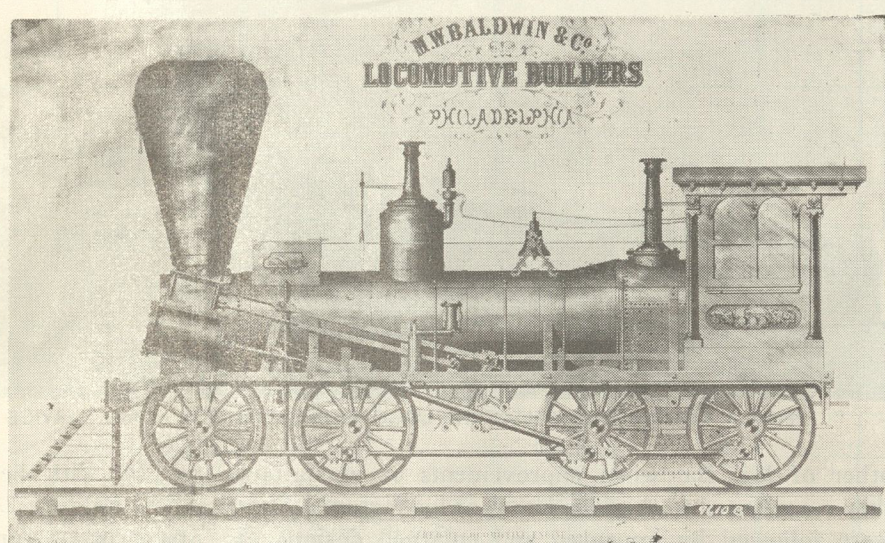
Eddystone



Clos. No. Sold



OLD IRONSIDES, the locomotive that started it all. Built by Matthias William Baldwin in person. The financial bickering that followed its sale almost drove Baldwin away from locomotives; fortunately it didn't. (Collection of Frederick Westing)



BALDWIN FLEXIBLE-BEAM TRUCK LOCOMOTIVE (0-8-0 TYPE) FOR HEAVY FREIGHT SERVICE AS BUILT IN 1853

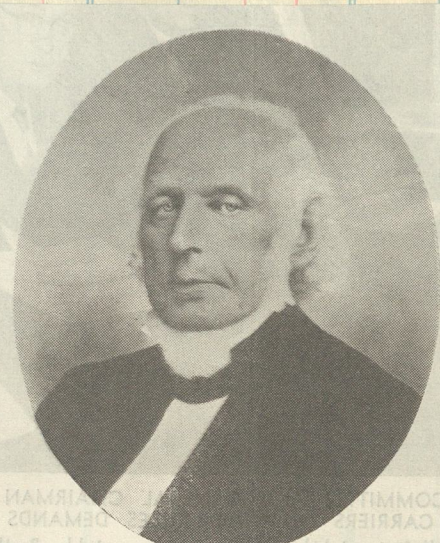
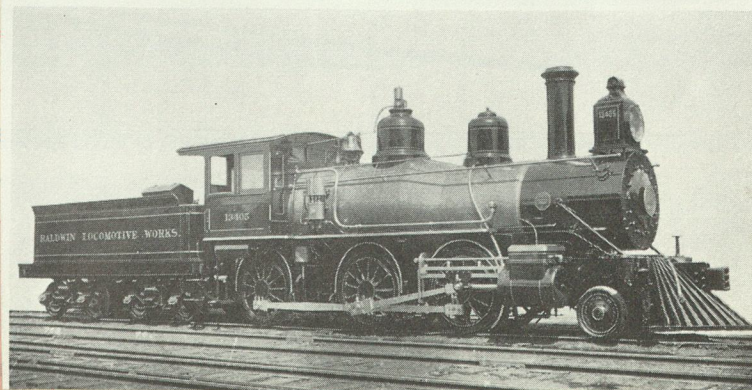
THE BALDWIN LOCOMOTIVE WORKS

1831	MATTHIAS W. BALDWIN	
1839	BALDWIN, VAIL & HUFTY	
M. W. BALDWIN*	GEORGE VAIL*	GEORGE W. HUFTY*
1841	BALDWIN & VAIL	
M. W. BALDWIN*	GEORGE VAIL*	
1842	BALDWIN & WHITNEY	
M. W. BALDWIN*	ASA WHITNEY*	
1846	M. W. BALDWIN	
1854	M. W. BALDWIN & CO.	
M. W. BALDWIN*	MATTHEW BAIRD*	
1867	M. BAIRD & CO.	
MATTHEW BAIRD*	GEORGE BURNHAM*	CHARLES T. PARRY*
1870	M. BAIRD & CO.	
MATTHEW BAIRD*	GEORGE BURNHAM*	CHARLES T. PARRY*
EDWARD H. HENSEY*	WILLIAM P. HENSEY*	EDWARD LONGSTRETH*
1873	BURNHAM, PARRY, WILLIAMS & CO.	
GEORGE BURNHAM*	CHARLES T. PARRY*	EDWARD H. WILLIAMS*
WILLIAM P. HENSEY*	EDWARD LONGSTRETH*	JOHN H. CONVERSE*
1886	BURNHAM, PARRY, WILLIAMS & CO.	
GEORGE BURNHAM*	CHARLES T. PARRY*	EDWARD H. WILLIAMS*
WILLIAM P. HENSEY*	JOHN H. CONVERSE*	WILLIAM C. STROUD*
1891	BURNHAM, WILLIAMS & CO.	
GEORGE BURNHAM*	EDWARD H. WILLIAMS*	WILLIAM P. HENSEY*
JOHN H. CONVERSE*	WILLIAM C. STROUD*	WILLIAM L. AUSTIN
1896	BURNHAM, WILLIAMS & CO.	
GEORGE BURNHAM*	EDWARD H. WILLIAMS*	WILLIAM P. HENSEY*
JOHN H. CONVERSE*	WILLIAM C. STROUD*	WILLIAM L. AUSTIN
1901	BURNHAM, WILLIAMS & CO.	
GEORGE BURNHAM*	WILLIAM P. HENSEY*	JOHN H. CONVERSE*
WILLIAM L. AUSTIN	SAMUEL M. VAUCLAIN	ALBA B. JOHNSON
1907	BURNHAM, WILLIAMS & CO.	
GEORGE BURNHAM*	WILLIAM P. HENSEY*	JOHN H. CONVERSE*
WILLIAM L. AUSTIN	SAMUEL M. VAUCLAIN	ALBA B. JOHNSON
1909	Incorporated under the Laws of Pennsylvania as BALDWIN LOCOMOTIVE WORKS	
1911	Incorporated under the Laws of Pennsylvania as THE BALDWIN LOCOMOTIVE WORKS	

*NOW DECEASED

1923

BALDWIN DEMONSTRATOR No. 13405 was a straight forward 2-6-0 of 1894. Sold to the Lima Northern, and later showed up on the roster of the Detroit & Lima Northern. (Collection of C. A. Brown)



MATTHIAS W. BALDWIN
Portrait of founder of the Baldwin Works

Organization, 1923

DIRECTORS

WILLIAM L. AUSTIN, Rosemont, Pa.	
SAMUEL M. VAUCLAIN, Rosemont, Pa.	
SAMUEL F. PRYOR, New York, N. Y.	
WILLIAM E. COREY, New York, N. Y.	
SYDNEY E. HUTCHINSON, Philadelphia, Pa.	
SIDNEY F. TYLER, Philadelphia, Pa.	
B. DAWSON COLEMAN, Lebanon, Pa.	
HAROLD T. WHITE, New York, N. Y.	
THOMAS G. ASHTON, Philadelphia, Pa.	
ARTHUR W. SEWALL, Philadelphia, Pa.	
THOMAS S. GATES, Philadelphia, Pa.	
JOHN M. HANSEN, Pittsburgh, Pa.	

OFFICERS

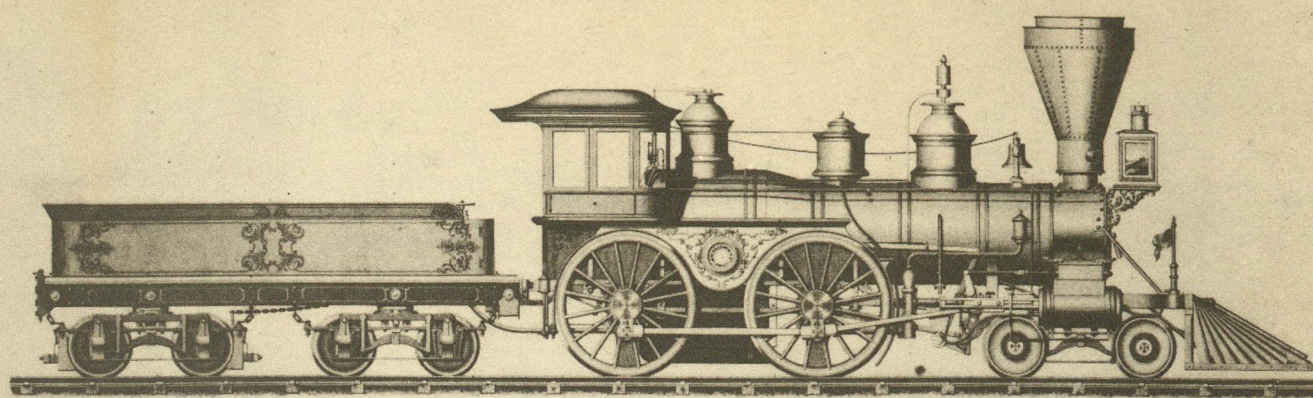
SAMUEL M. VAUCLAIN	President
JOHN P. SYKES	Senior Vice-President in Charge of Plants and Manufacture
WILLIAM DEKRAFFT	Vice-President in Charge of Finance, and Treasurer
GRAFTON GREENOUGH	Vice-President in Charge of Domestic Sales
F. DE ST. PHALLE	Vice-President in Charge of Foreign Sales
JAMES McNAUGHTON	Vice-President in Charge of the New York Office
CHARLES A. BOURGEOIS	Vice-President in Charge of Manu- facture
JACQUES L. VAUCLAIN	Vice-President in Charge of Plant and Equipment
HARRY GLAENZER	Vice-President in Charge of Engi- neering
WILLIAM A. RUSSELL	Vice-President in Charge of Purchases
HENRY V. WILLE	Consulting Vice-President Concern- ing Engineering and Metallurgy
ARTHUR L. CHURCH	Secretary and Assistant Treasurer
A. B. EHST	Comptroller

General Counsel

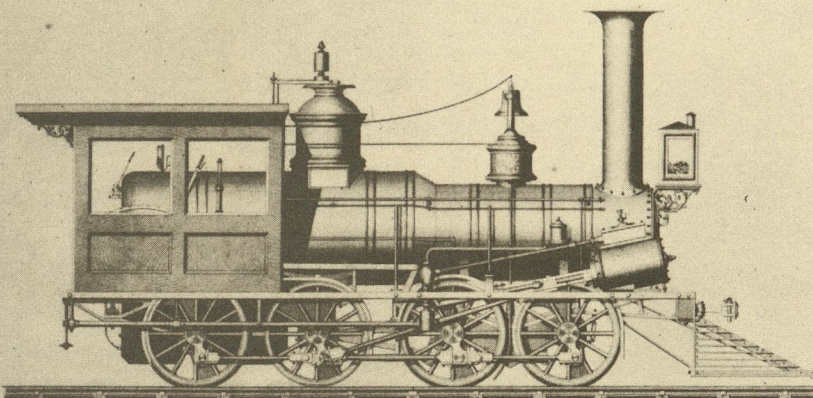
MORGAN, LEWIS and BOCKIUS
934 Land Title Building, Philadelphia

M. W. BALDWIN & CO PHILADELPHIA.

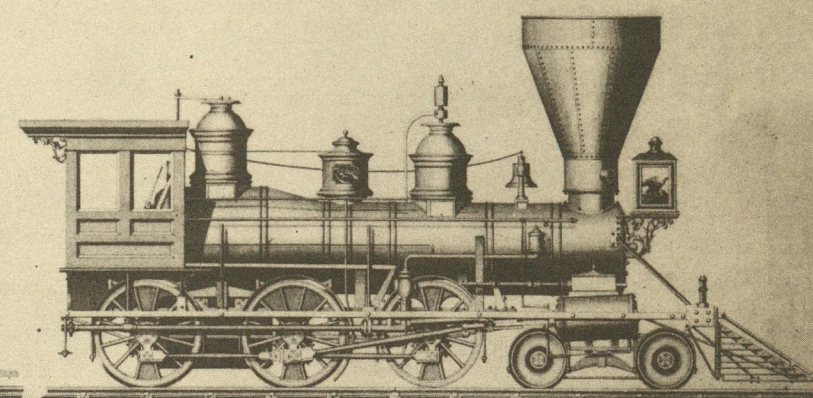
43



Locomotives of this class from 35,000 lbs to 65,000 lbs.

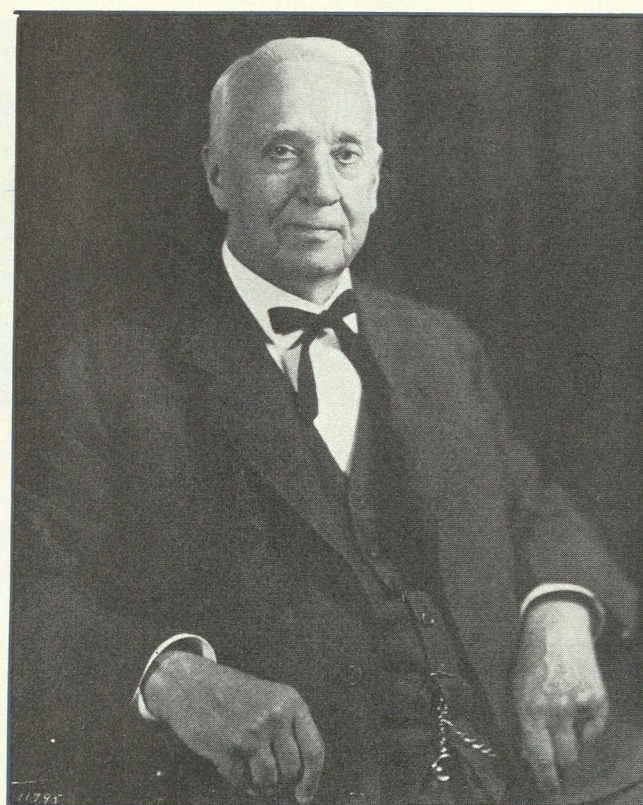


Locomotives of this class from 42,000 lbs to 70,000 lbs.



Locomotives of this class from 50,000 lbs to 70,000 lbs.

A Baldwin Advertizing Lithograph of the Fifties



SAMUEL M. VAUCLAIN—"Mr. Locomotive" served Baldwin for 37 years.

Samuel Matthew Vauclain

BORN, MAY 18, 1856

DIED, FEBRUARY 4, 1910

When Samuel Matthew Vauclain passed away, our Country lost one of its distinguished citizens. The Railroad World, which he loved so well and which loved and honored him, lost a man whose energy and genius had served it for more than sixty-five years.

With his death, The Baldwin Locomotive Works lost a leader whose guiding genius was one of the most potent factors in the development of Baldwin as a great industrial plant. The name "Vauclain" will always be associated with this Company which he served for fifty-seven years as Superintendent, Partner, Vice-President, President and Chairman of the Board.

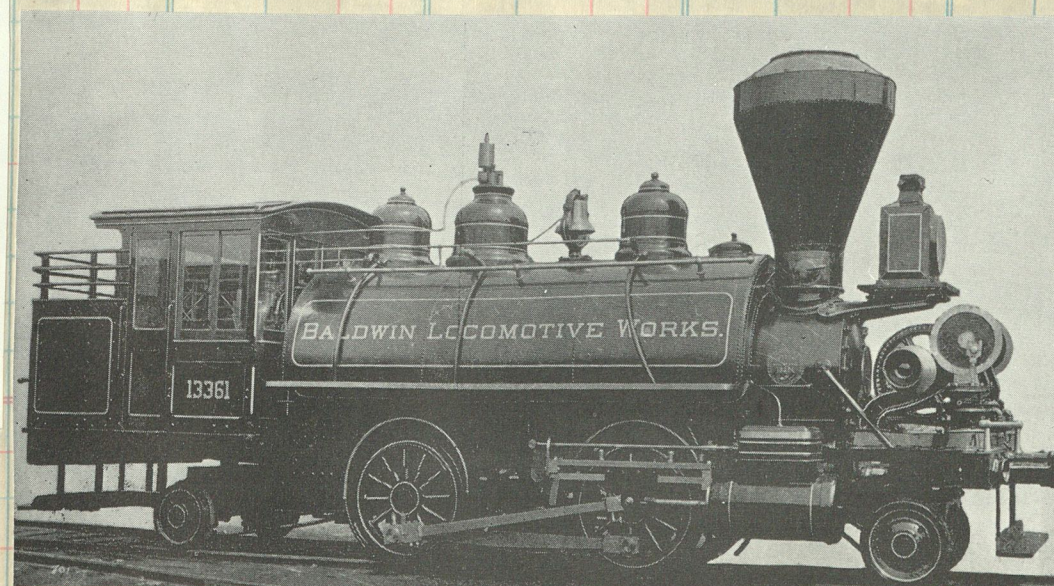
Not only in the United States, but throughout the world, wherever there are railroads, the news of Mr. Vauclain's death was received with sorrow by those who had known and worked with him. Nowhere was this sorrow more profound than among his associates at Baldwin to whom he was fellow-worker as well as Chief.

To think of Mr. Vauclain is to think of those who shared his labors, for he was essentially a worker. He was proud of the fact that he had started his career as an humble apprentice; proud, even when he headed the Baldwin organization, to join his men in the shops and put his shoulder to the wheel.

Mr. Vauclain often remarked that the man who liked his job and who "worked for the work's sake," not only found contentment but material success as well. With him this was not merely a theory, it was the rule by which he regulated his entire business life. In his success it found its highest fulfillment.

This man, whose great character we attempt so feebly to portray, was a devoted husband, father and grandfather, philanthropist, world traveler, business executive, salesman, mechanic, and public-spirited citizen. He was an optimist in the best sense of the word. Not only did he believe in the future of his Country and his fellow man, he devoted his best energies to the task of making his dream come true.

With the death of Samuel Matthew Vauclain, there passed one of the truly great men of our time.



INTENDED as a sort of Jack of all trades, Baldwin demonstrator No. 13361 was locomotive, fire engine and winch all in one. Built in 1894. (Collection of C. A. Brown)

Established 1831

BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

Annual Capacity 600.

BURNHAM, PARRY, WILLIAMS & CO., PROPRIETORS

GEO. BURNHAM,
CHAS. T. PARRY,
EDWARD H. WILLIAMS,

MANUFACTURERS OF

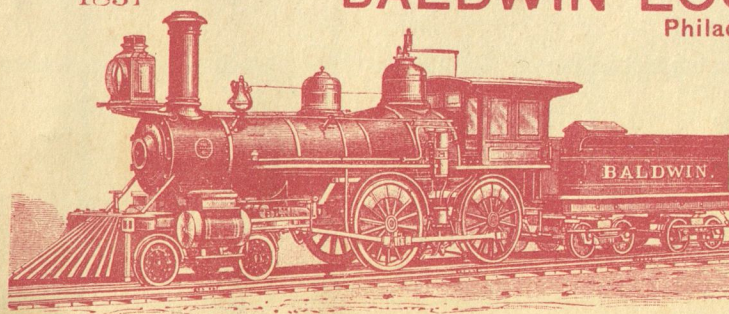
WM. P. HENSEY,
EDW. LONGSTRETH,
JOHN H. CONVERSE.

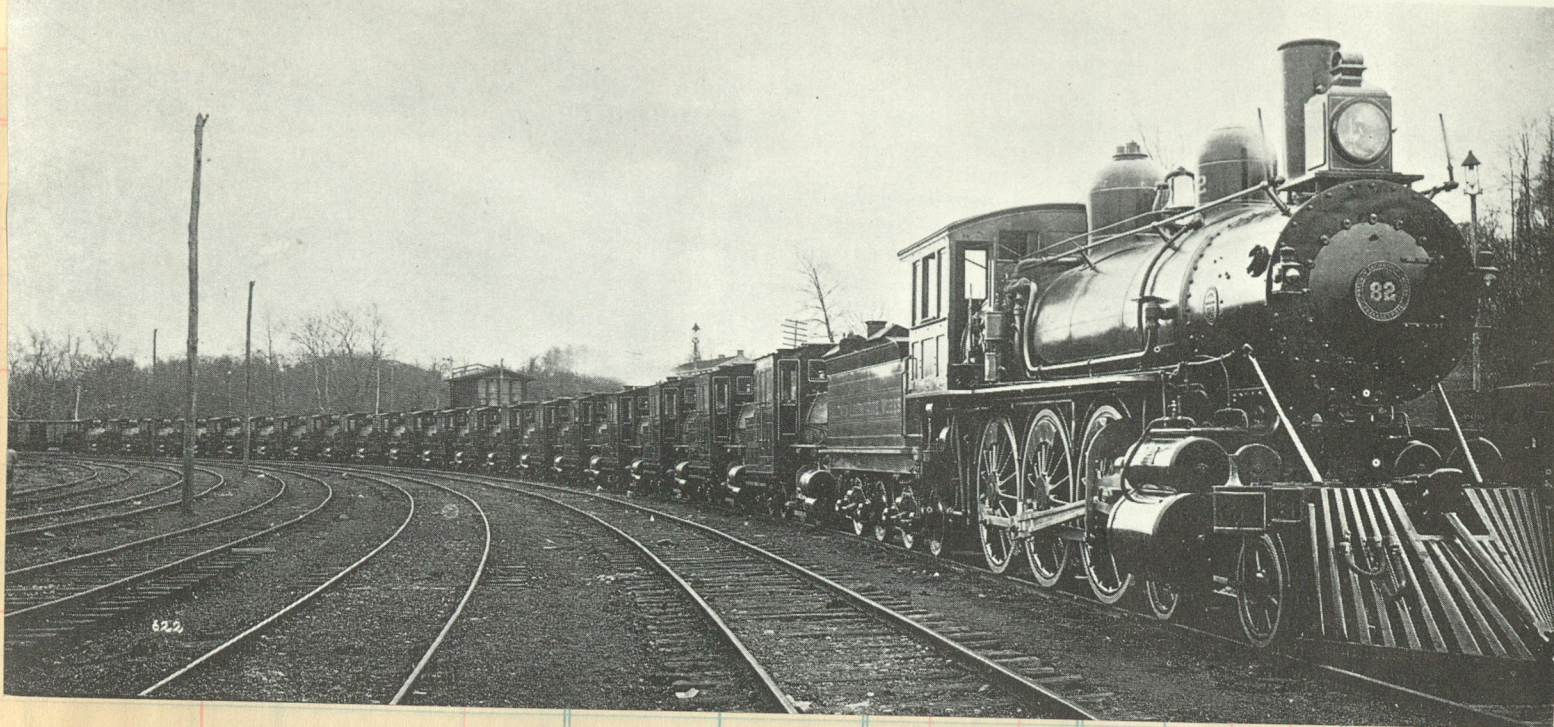
LOCOMOTIVE ENGINES,

Adapted to every variety of service, and built accurately to standard gauges and templates. Like parts of different engines of same class perfectly interchangeable.

PASSENGER AND FREIGHT LOCOMOTIVES, MINE LOCOMOTIVES, NARROW GAUGE LOCOMOTIVES, STEAM STREET CARS, ETC.

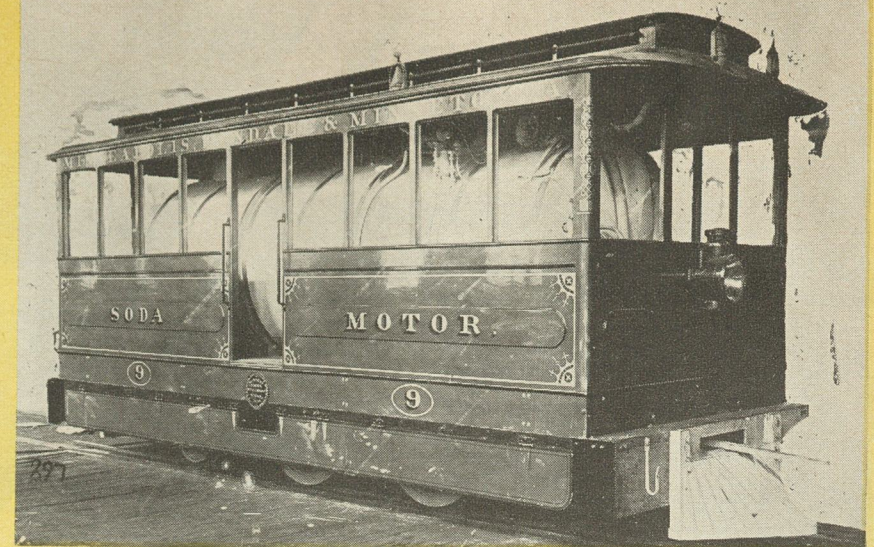
Illustrated Catalogues furnished on application of customers. All work thoroughly guaranteed





Would
you
believe
it?

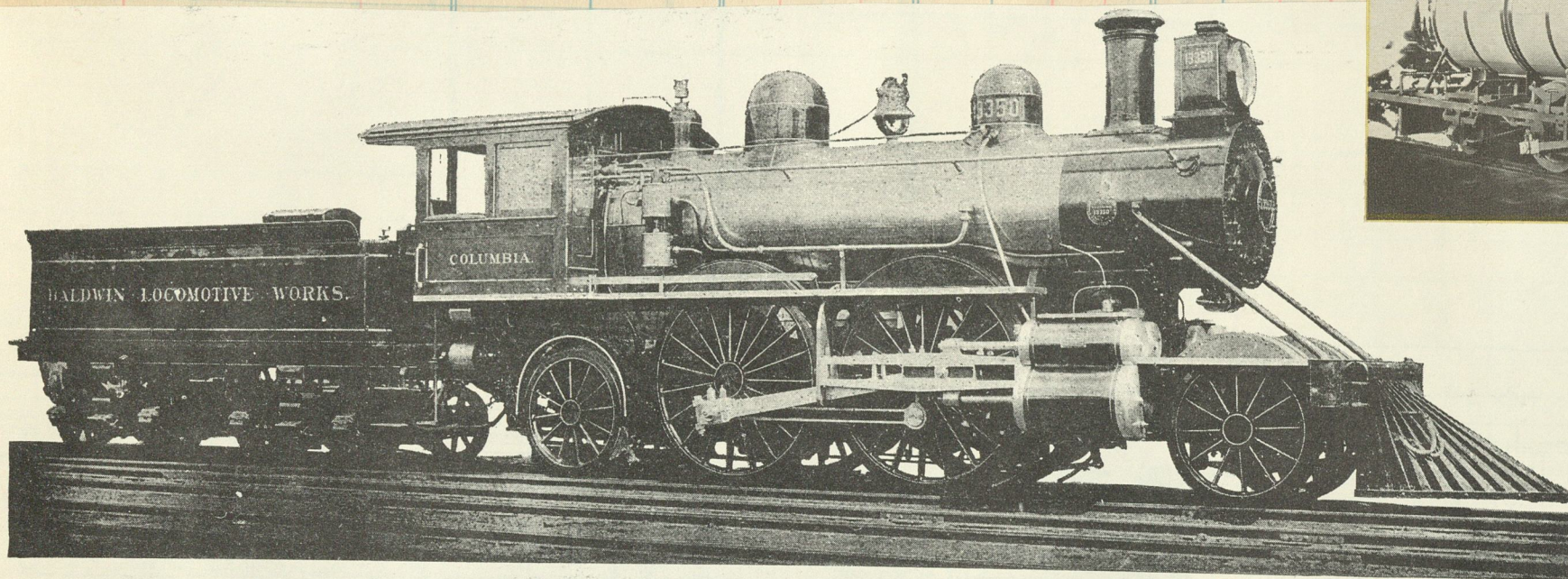
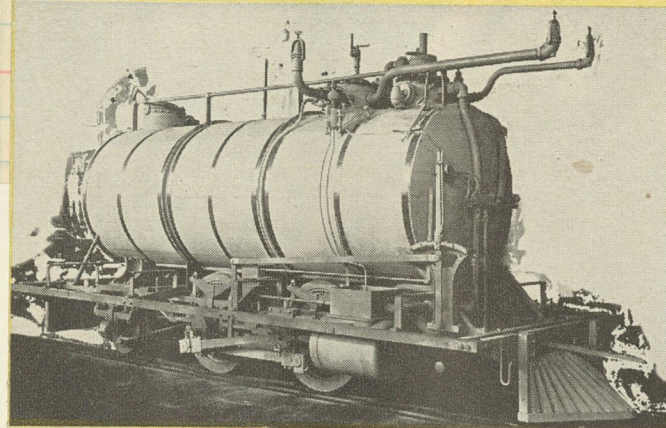
edited / DAVID P. MORGAN



Collection of H. L. Broadbelt.

How to mix a soda (motor)

BEFORE traction motors and trolley poles many a U.S. street railway was powered by steam "motors," boxed in like horse cars so as not to scare equestrian traffic. In 1886 the aggressive Minneapolis, Lyndale & Minnetonka acquired No. 9, a soda motor, from Baldwin. Its design was based upon the discovery (by Moritz Honigmann of Germany) that a strong solution of caustic soda increases in temperature when more water is added. Huge boiler contained soda at 329 degrees F at start of run. Boiler tubes contained pure water which developed steam for cylinders. As the steam was exhausted it passed into soda chamber, and here it condensed, raising the boiler temperature and producing more steam.



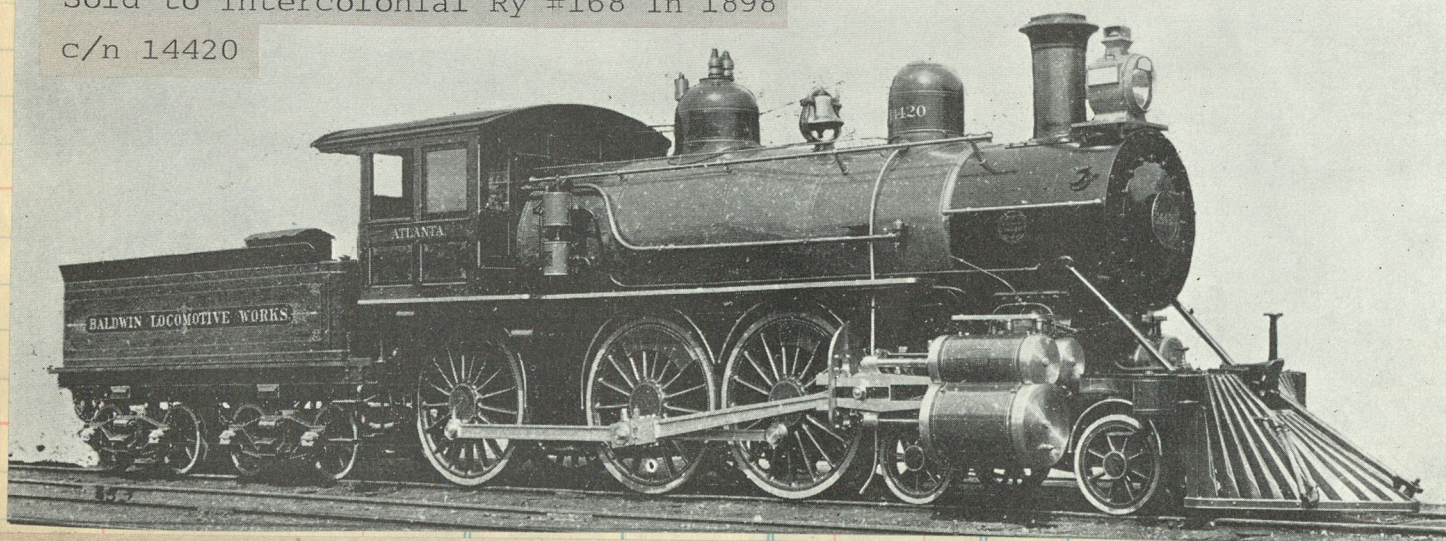
Compound passenger locomotive, Columbia, built by the Baldwin Locomotive Works in 1893.

c/n 13350

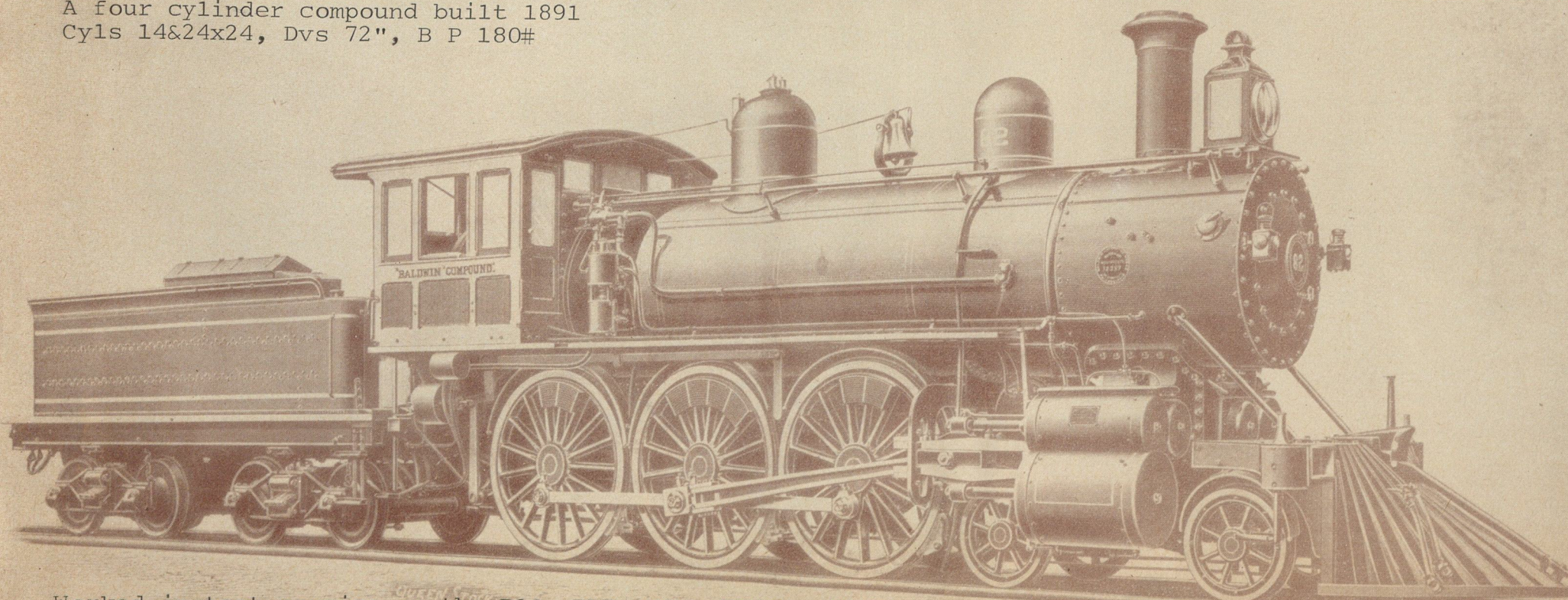
BALDWIN DEMONSTRATOR 14420 was built for display at the Southern States & International Exhibition held in Atlanta in 1895. Later sold to the Intercolonial Rwy. of Canada. (Collection of C. A. Brown)

Sold to Intercolonial Ry #168 in 1898

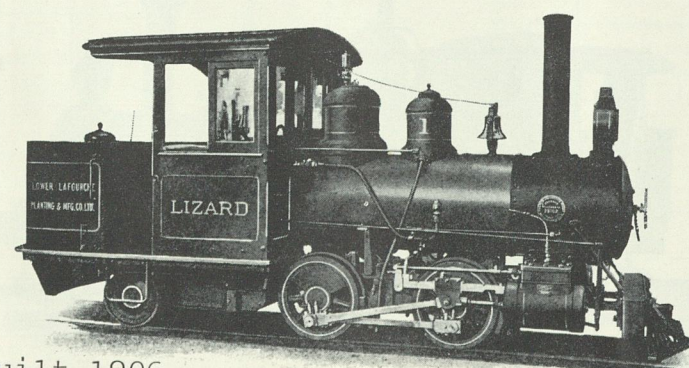
c/n 14420



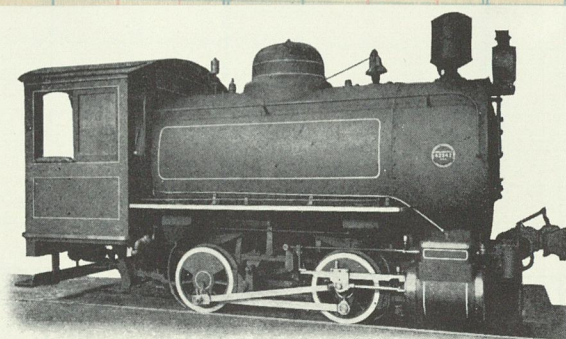
A four cylinder compound built 1891
Cyls 14x24x24, Dvs 72", B P 180#



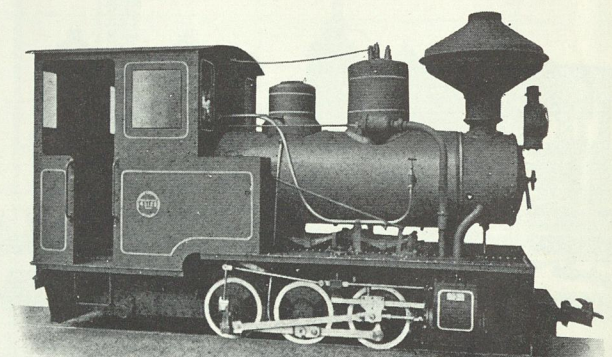
Worked in test service on the B&O, PRR, N&W, ETV&G, CH&D, Erie, CM&StP, NP, CB&Q. Sold to the C&PA in 1896.



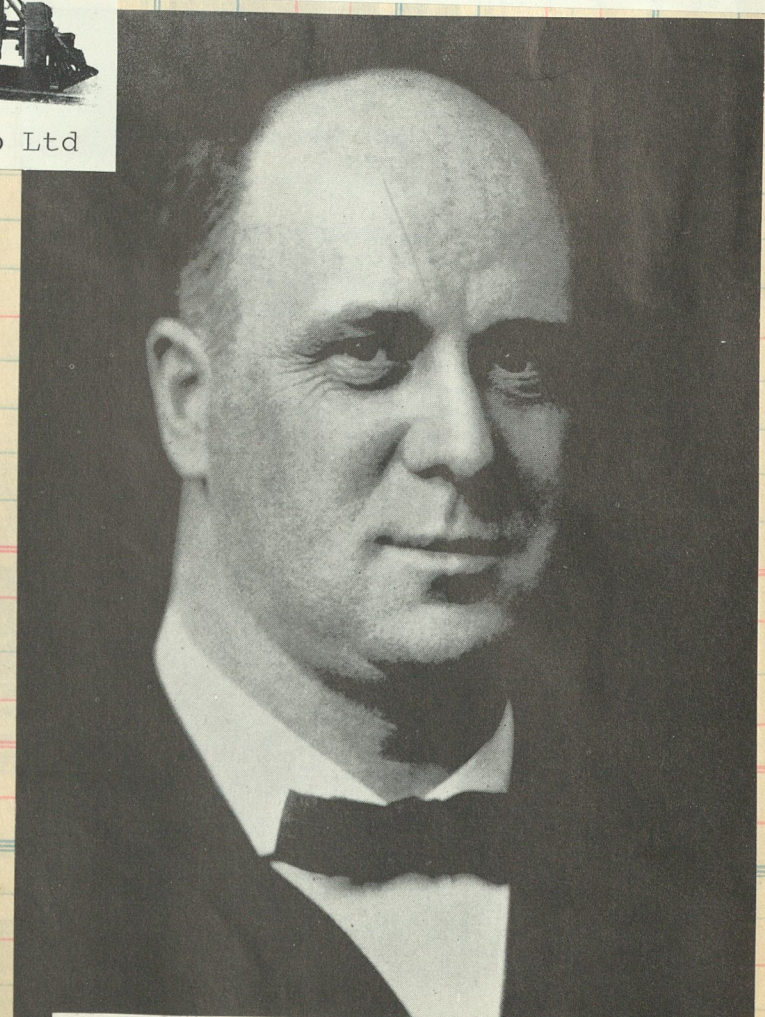
Built 1906
Lower LaFourche Planting & Mfg Co Ltd



Fireless



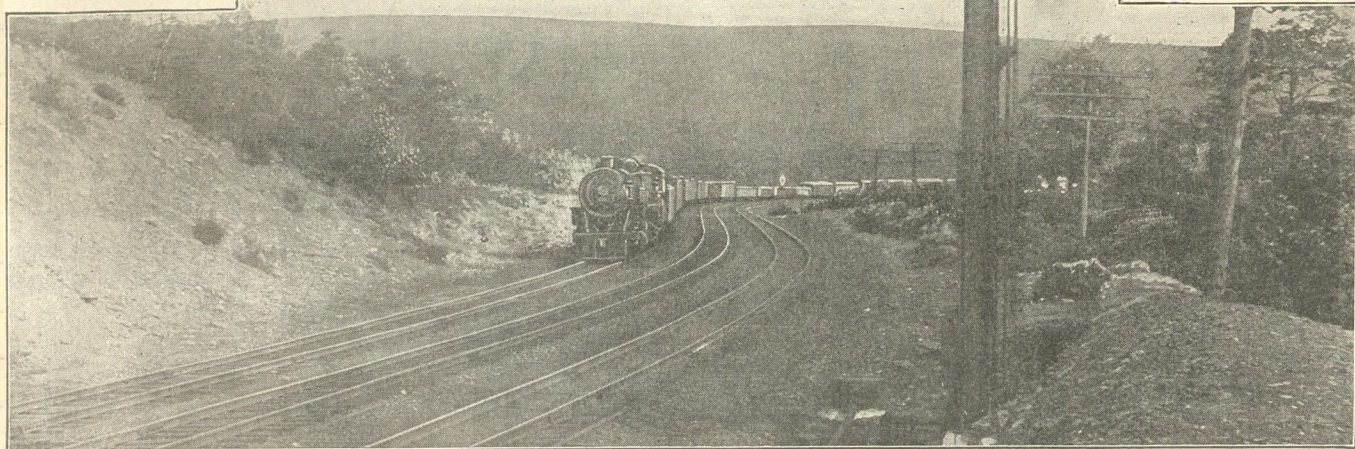
30" gauge



A STAR STEAM locomotive salesman, was Grafton Greenough, Vice President in charge of domestic sales, who died in 1926. (Collection of Frederick Westing)

c/n 12357

BALDWIN

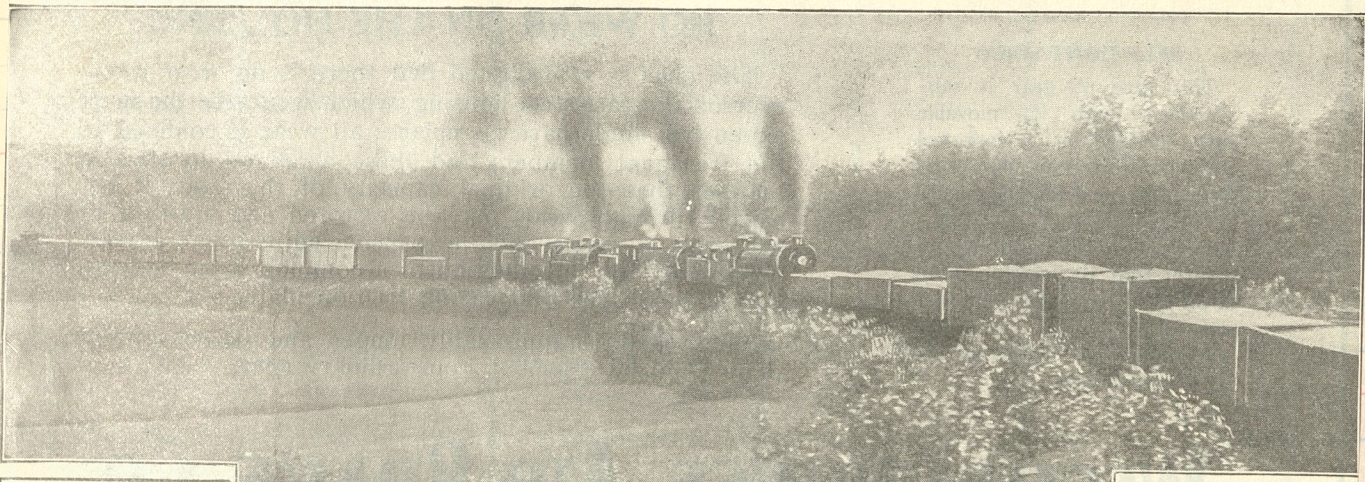


Four Baldwin Locomotives Handling 4213 Tons

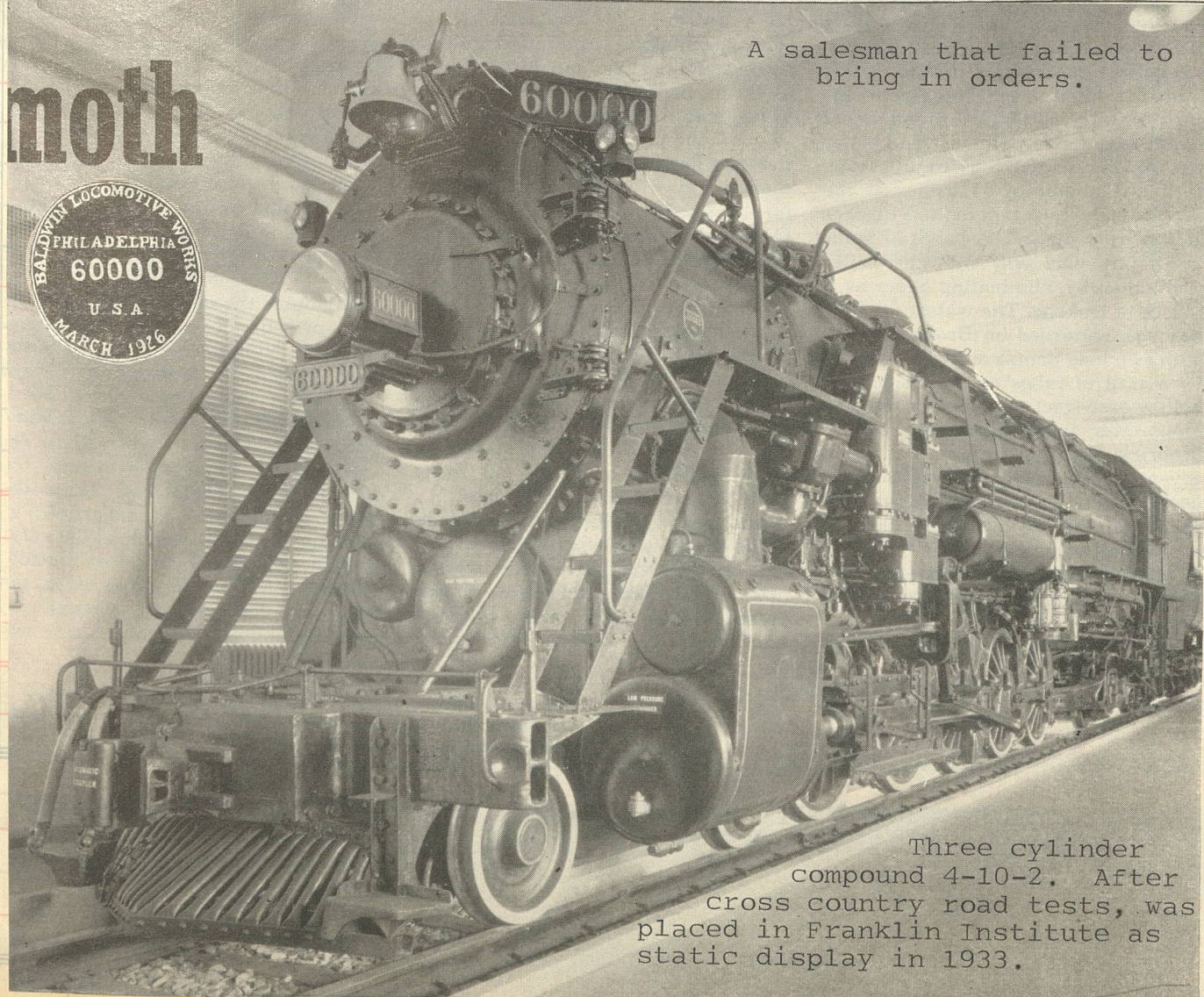
in 75 cars west-bound, between White Haven, Pa., and the summit of Wilkes-Barre Mountain on the Lehigh Valley. The leading locomotive is of the Santa Fe (2-10-2) type and the three pushers are of the Mikado (2-8-2) type. The maximum ascending grade on this section of the line is 67.3 feet per mile and the speed of the train illustrated was approximately 20 miles per hour.

Lehigh Valley motive power is designed to meet special traffic requirements, and Baldwin locomotives are making good under the most exacting conditions of service.

THE BALDWIN LOCOMOTIVE WORKS PHILADELPHIA



LOCOMOTIVES



Sold Amount

MANY LOGGING companies used Mallet type engines wherein Anatole Mallet's plan of articulated drive in combination with the compound method of steam distribution was used.

Cylinders 18" and 28" x 24"

Drivers 44"

Boiler diameter 66"

Weight, total engine, 209,670 lb.

(Collection of Frederick Westing)



45
FOR THE FOREIGN MARKET some clean-cut Pacific and Mikado type locomotives were built in 1924, for the Madras and Southern Mahratta Railway, Ltd. in India. Interchangeable boilers were used and many parts of the running gear were suitable for either type. The front of the tender was roofed over and horizontal, movable shutters were applied to both sides of the cab and tender to give protection to the engine crews during the heavy rains of the monsoon season. Track gauge was 5-feet, 6-inches. Engine No. 900, a Pacific type, is shown in the illustration.

Cylinders, 22" x 28"

Drivers, 74"

Weight, total engine, 184,600 lb.

(Collection of Frederick Westing)

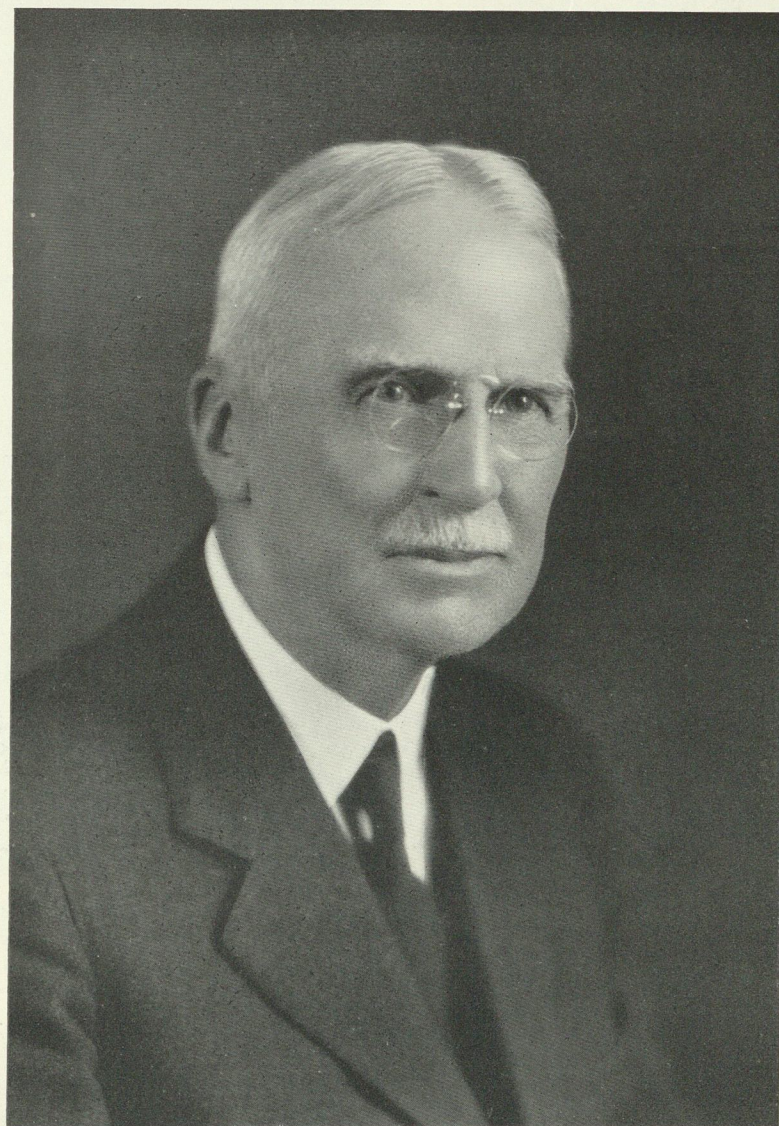
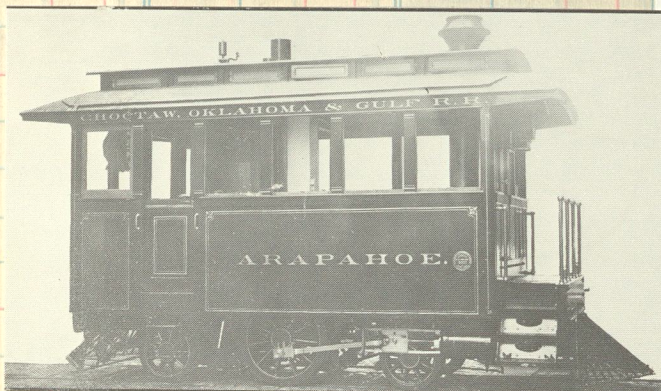
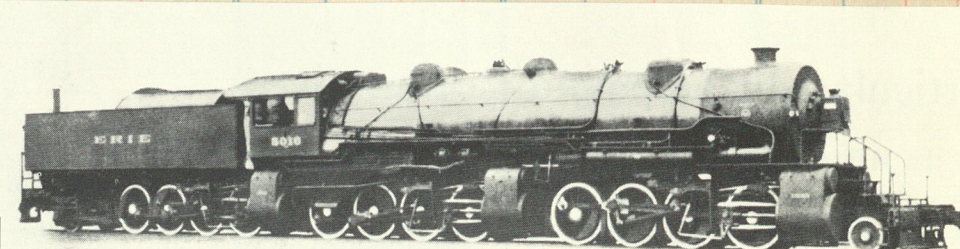
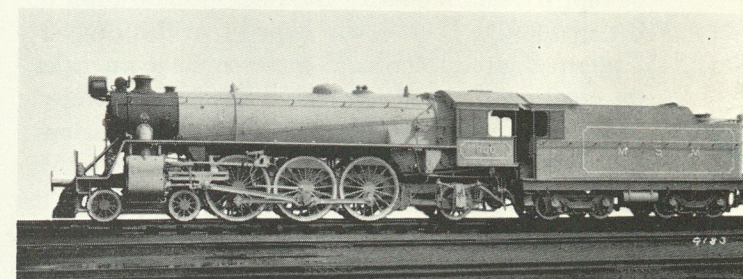


Photo by Phillips Studio

ARTHUR LATHAM CHURCH

It is with regret that we record the death on June 25, 1931, of Arthur Latham Church, Secretary of The Baldwin Locomotive Works and of several of its subsidiary companies.

Mr. Church was born in Philadelphia on October 11, 1858, and was graduated from the Towne Scientific School of the University of Pennsylvania, with the degree of Bachelor of Science. He was President of the Class of 1878, College. Upon graduation he entered the employ of the Engineering Department of the William Cramp & Sons Ship and Engine Building Company, and subsequently served on the engineering staffs of several ocean steamships. Later he was employed as draftsman with the Union Iron Works, of San Francisco, shipbuilders. In March, 1886, he entered the employ of The Baldwin Locomotive Works, serving in various capacities. For twenty-three years he was in charge of the Department of Repairs, and in 1919 was appointed Secretary and Assistant Treasurer.

Mr. Church had various outside interests. He was a Life Trustee of the University of Pennsylvania, serving in that capacity for twenty-six years, and was a member of the Executive Board in Regard to Engineering Education, and also In Regard to Teacher Training. He took a great interest in the affairs of the institution.

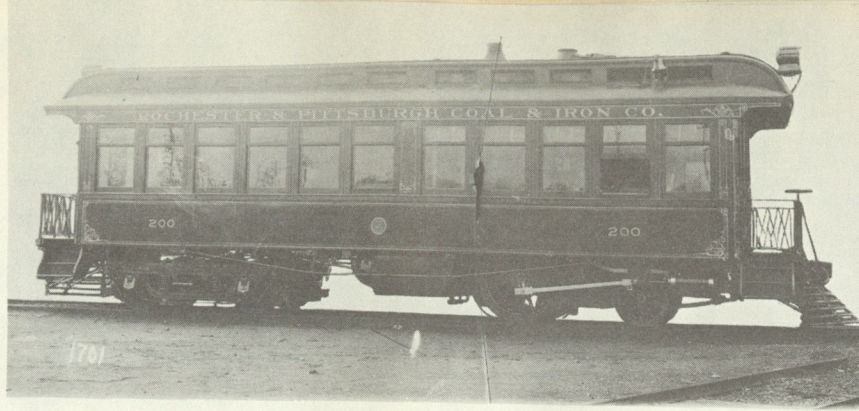
He was a member of the American Society of Mechanical Engineers, the Engineers' Club of Philadelphia, and other engineering associations. He was also a member of the University Club, the Corinthian Yacht Club, and the Orpheus Club, and was very much interested in music. Yachting was his favorite sport, and he was the author of numerous articles on that subject.

Above all, Mr. Church was possessed of a genial and kindly disposition; he was a loyal friend, beloved and honored by all who knew him. His loss is keenly felt by a large circle of friends and associates.

46



Central Railroad of New Jersey #900, 1903, 4-4-0 inspection



Rochester & Pittsburgh Coal & Iron Co. #200, 1902, 2-2-4T steam car type.

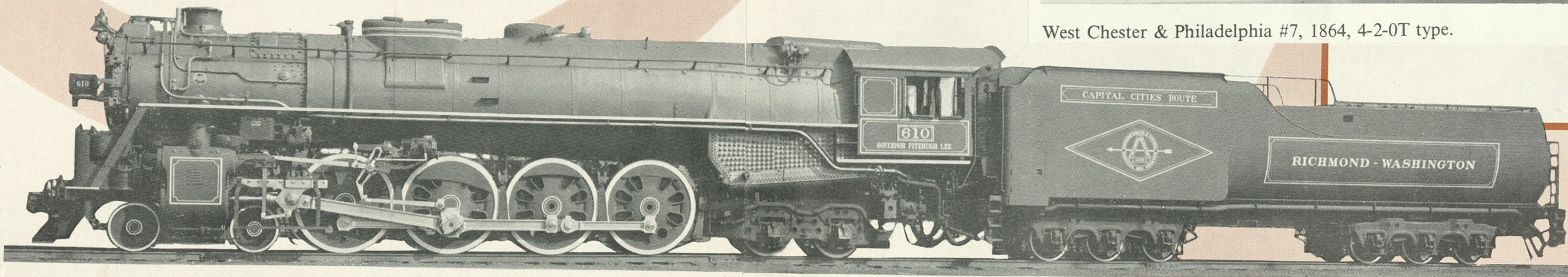


West Chester & Philadelphia #7, 1864, 4-2-0T type.

Clos. No. Sold Amount

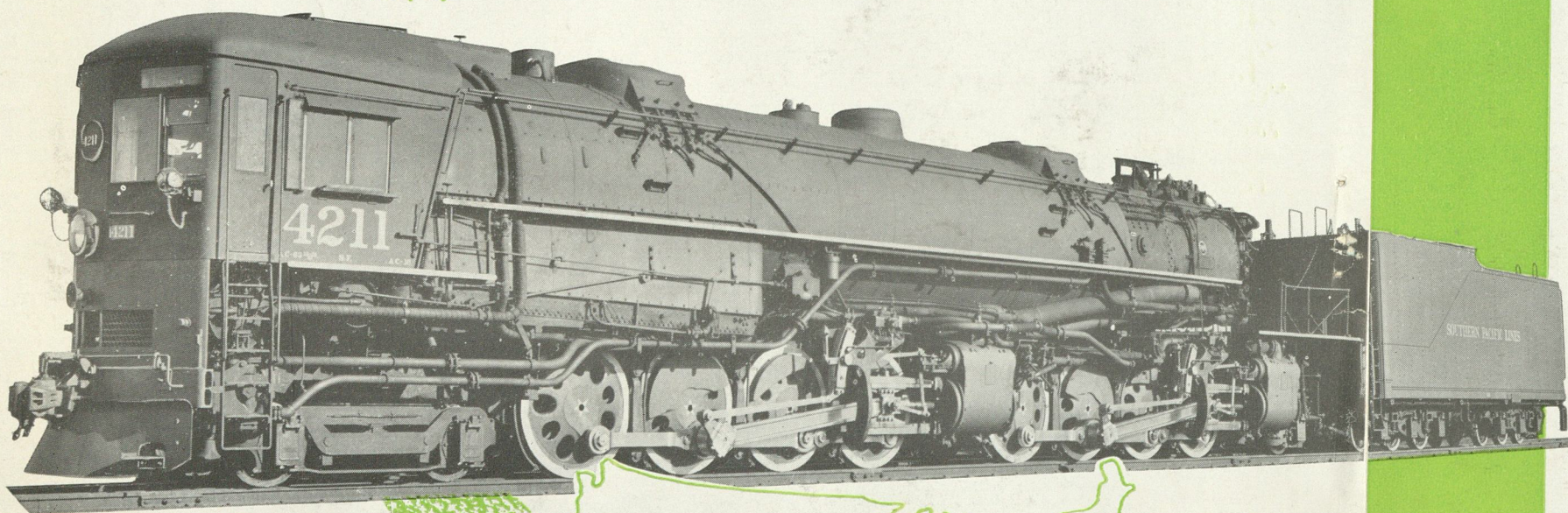
c/n 64628

BUILT BY
BALDWIN
1942
606--612

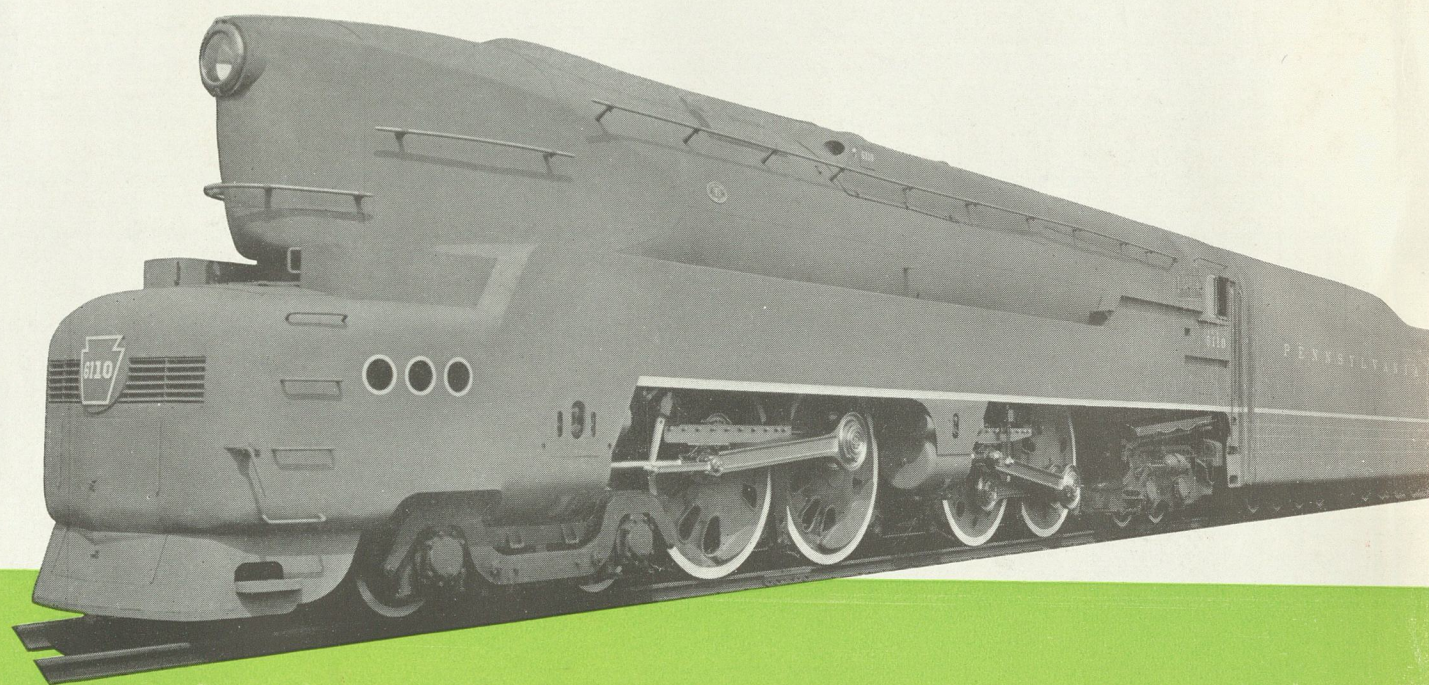


Modern Baldwin
power

serves
the East and West coasts



BALDWIN
SERVES THE NATION
WHICH THE RAILROADS
HELPED TO BUILD



In the East

On the Pennsylvania Railroad's Harrisburg to Chicago run, the streamlined Baldwin-built 4-4-4-4 type locomotive "T 1" makes its 713-mile trip with only one stop for fuel. It carries 19,500 gallons of water, 41 tons of coal, and is designed to operate on any part of the Pennsylvania Railroad system.

In the West

On the Southern Pacific lines, Baldwin-built 4-8-8-2 locomotives are used on the heavy grades of the Sierra Nevada and other mountainous parts of the system. East bound, over the Sierras, three of these locomotives handle trains of 100 cars, at high speeds and on regular schedules.

These are but two examples of the service which thousands of Baldwin locomotives are delivering to the railroads of America—helping them to haul the men and materials so vital to Victory. In addition, Baldwin facilities and resources are devoted to the task of building tanks, guns and other materiel for our armed forces.

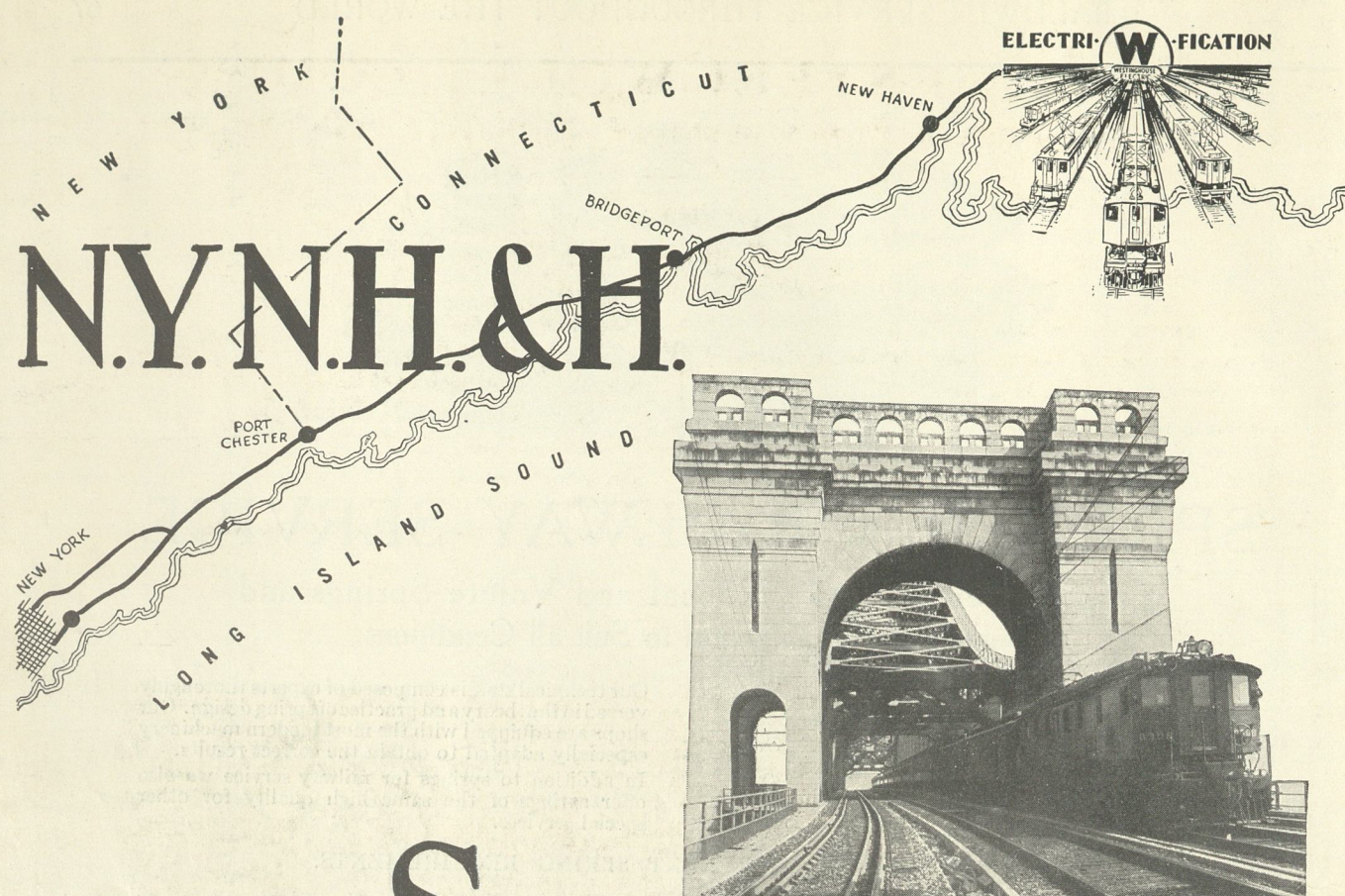


THE

BALDWIN

LOCOMOTIVE WORKS

Philadelphia

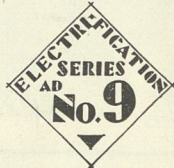


Solving the Problem

WHEN the New York, New Haven & Hartford Railroad was required, by legislative act, to electrify its service into New York City, it was decided to select a system capable of handling through trunk line traffic, and one which could be economically expanded. The alternating-current system was selected as the only system capable of meeting the requirements, even though much of the motive power was required to operate over tracks electrified with the direct-current system.

Initial operation took place in July, 1907 between New York and Stamford. The installation stands today as the world's most comprehensive electrification. It now includes 116 miles of route, largely four track, and employs 141 electric locomotives and 63 motor cars with 112 trail cars. All services, freight, passenger and switching are electrified. The completed work is a tribute to the wisdom of those who boldly undertook and accomplished this pioneer alternating-current electrification which has had a most far-reaching effect upon the development of railroad electrification.

THE BALDWIN LOCOMOTIVE WORKS, PHILADELPHIA, PA.
WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH PENNSYLVANIA



Baldwin-Westinghouse

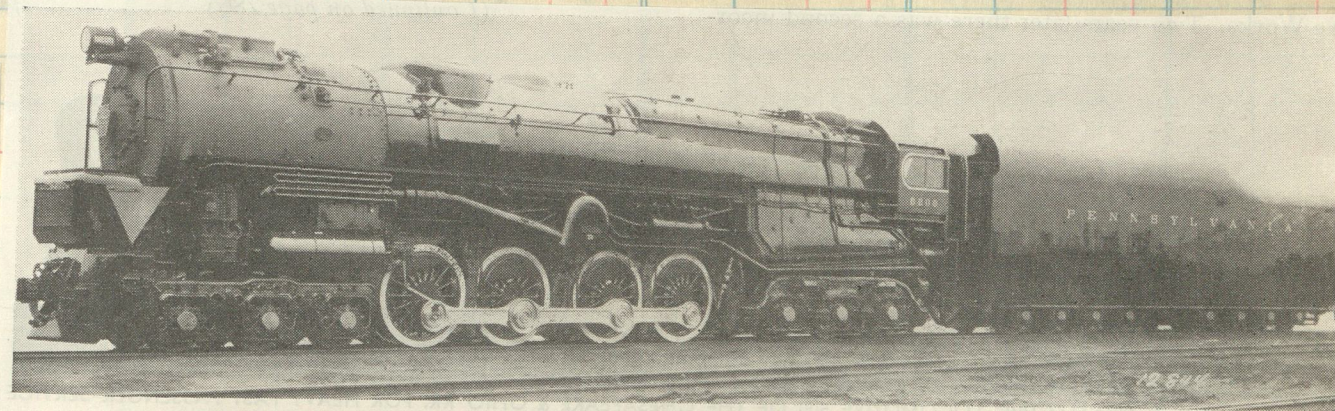
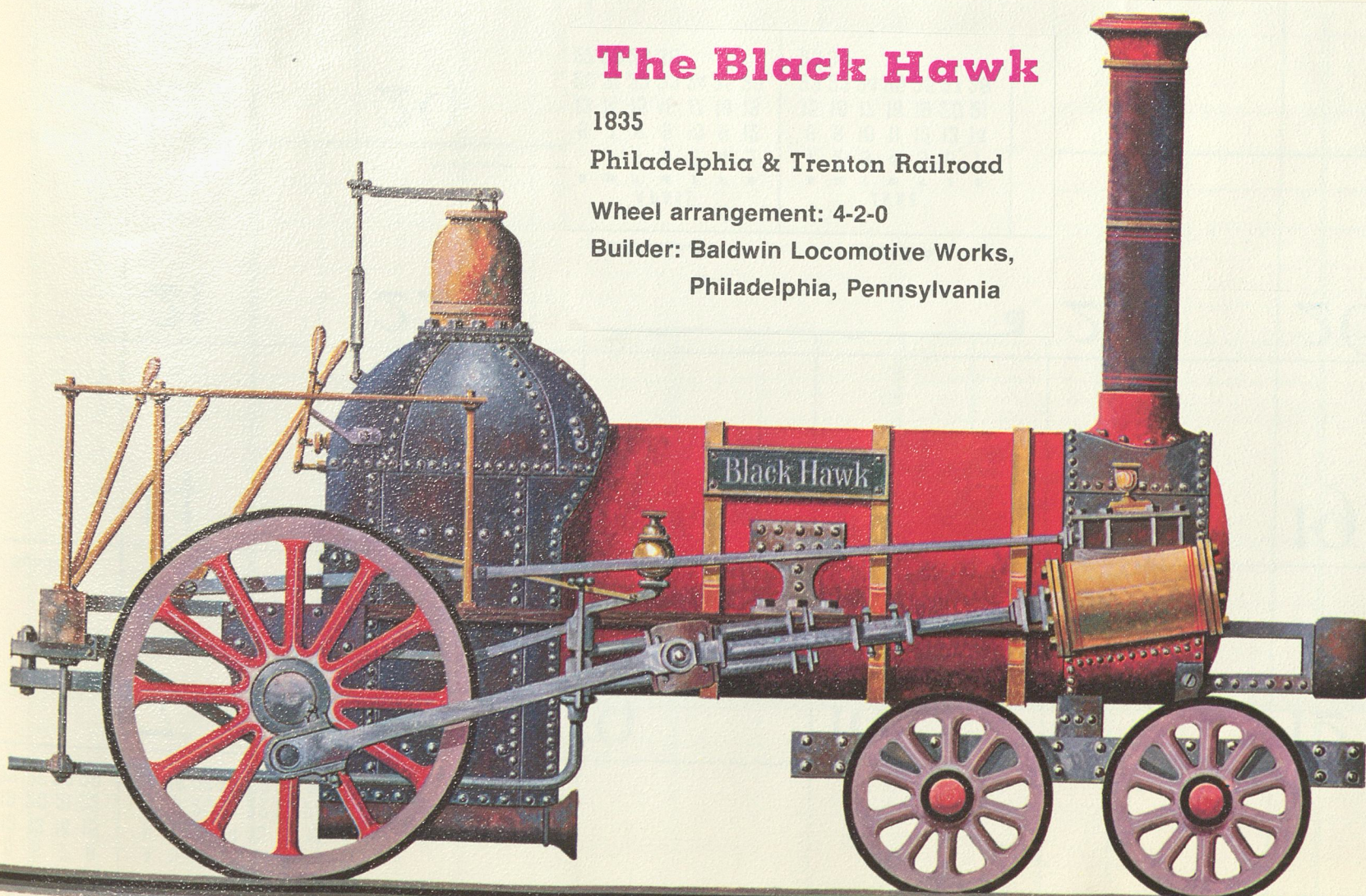
T 30485

The Black Hawk

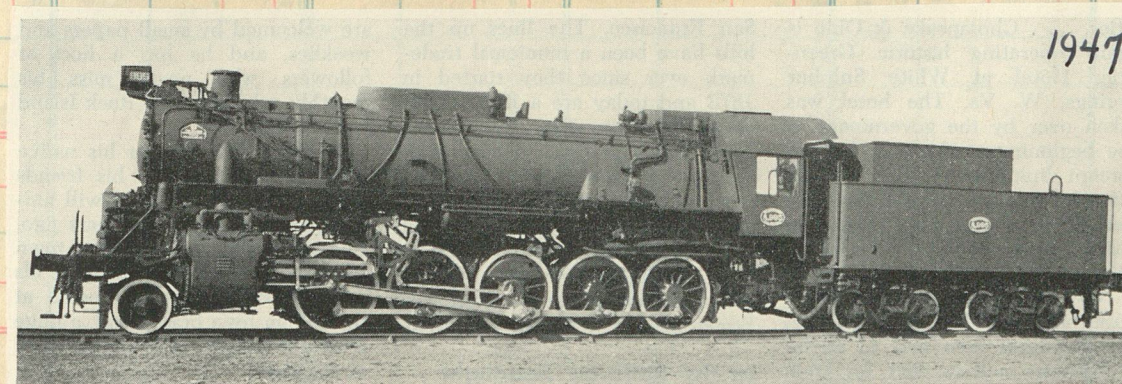
1835

Philadelphia & Trenton Railroad

Wheel arrangement: 4-2-0

Builder: Baldwin Locomotive Works,
Philadelphia, Pennsylvania

BALDWIN-BUILT STEAM-TURBINE LOCOMOTIVE 6200 OF THE PENNSYLVANIA RR., 6-8-6 TYPE, CLASS S-2



Eight lightweight 2-10-0 type steam locomotives have been built by Baldwin to operate in Greece over the temporary bridges which have replaced permanent structures blown up during the war. Weight per driving axle is only 16.3 tons.

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, PA., U. S. A.

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335 American Bank Building

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2910 Russ Building

*(Mailing address given in brackets in cases where it differs from street address.)

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STANDARD STEEL WORKS COMPANY
BALDWIN-SOUTHWARK CORPORATION
THE WHITCOMB LOCOMOTIVE COMPANY
CRAMP BRASS AND IRON FOUNDRIES COMPANYI. P. MORRIS & DE LA VERGNE, INCORPORATED
THE PELTON WATER WHEEL COMPANY
DE LA VERGNE ENGINE COMPANY
BALDWIN LOCOMOTIVE SECURITIES CORPORATION

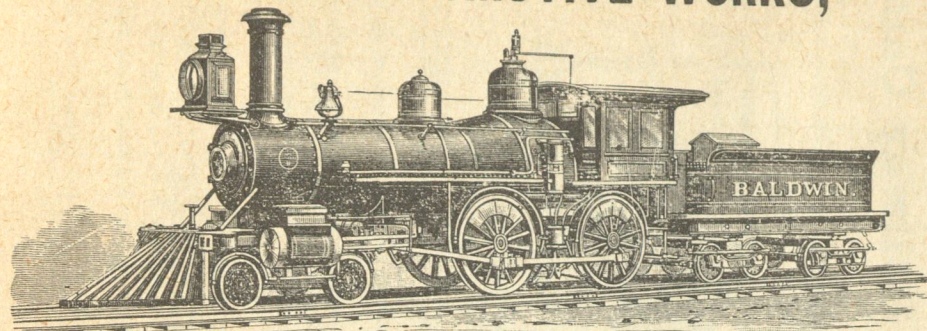
1931

1947

ESTABLISHED 1831.

ANNUAL CAPACITY. 800.

BALDWIN LOCOMOTIVE WORKS,



Burnham, Parry, Williams & Co., Prop's,
PHILADELPHIA, PA.,

MANUFACTURERS OF

LOCOMOTIVE ENGINES,

Adapted to every variety of service, and built accurately to standard gauges and templates.

LIKE PARTS OF DIFFERENT ENGINES OF SAME CLASS PERFECTLY INTERCHANGEABLE.

PASSENGER AND FREIGHT LOCOMOTIVES,

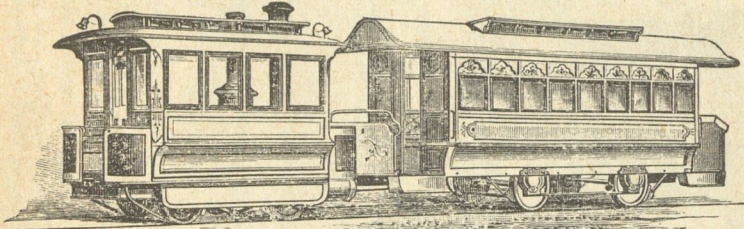
NARROW-GUAGE LOCOMOTIVES,

Mine Locomotives, Contractors' Locomotives, Locomotives for Iron Furnaces,
Logging Railroads, Sugar Estate Railroads, Rolling Mills, etc.

Photographs and Estimates furnished on application of Customers. All work
thoroughly guaranteed.

NOISELESS STEAM MOTORS,

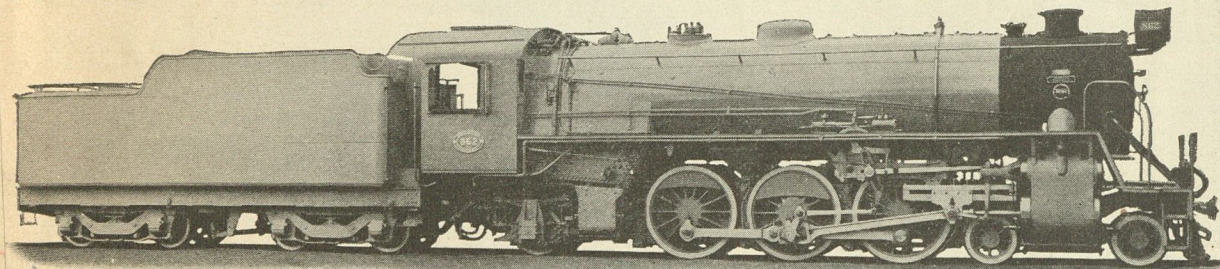
For City and Suburban Railways.



These machines are nearly noiseless in operation; show no smoke with the use of anthracite coal
or coke as fuel, and show little or no steam under ordinary conditions of service. They can be run at
two or three times the speed of horse cars and draw additional cars. Circulars with full particulars
supplied.

GEORGE BURNHAM, JOHN H. CONVERSE,
EDW. H. WILLIAMS, WM. C. STROUD,
WILLIAM P. HENSZEY, WM. L. AUSTIN.

BURNHAM, PARRY, WILLIAMS & CO.,
PHILADELPHIA, PA.



South African Rys

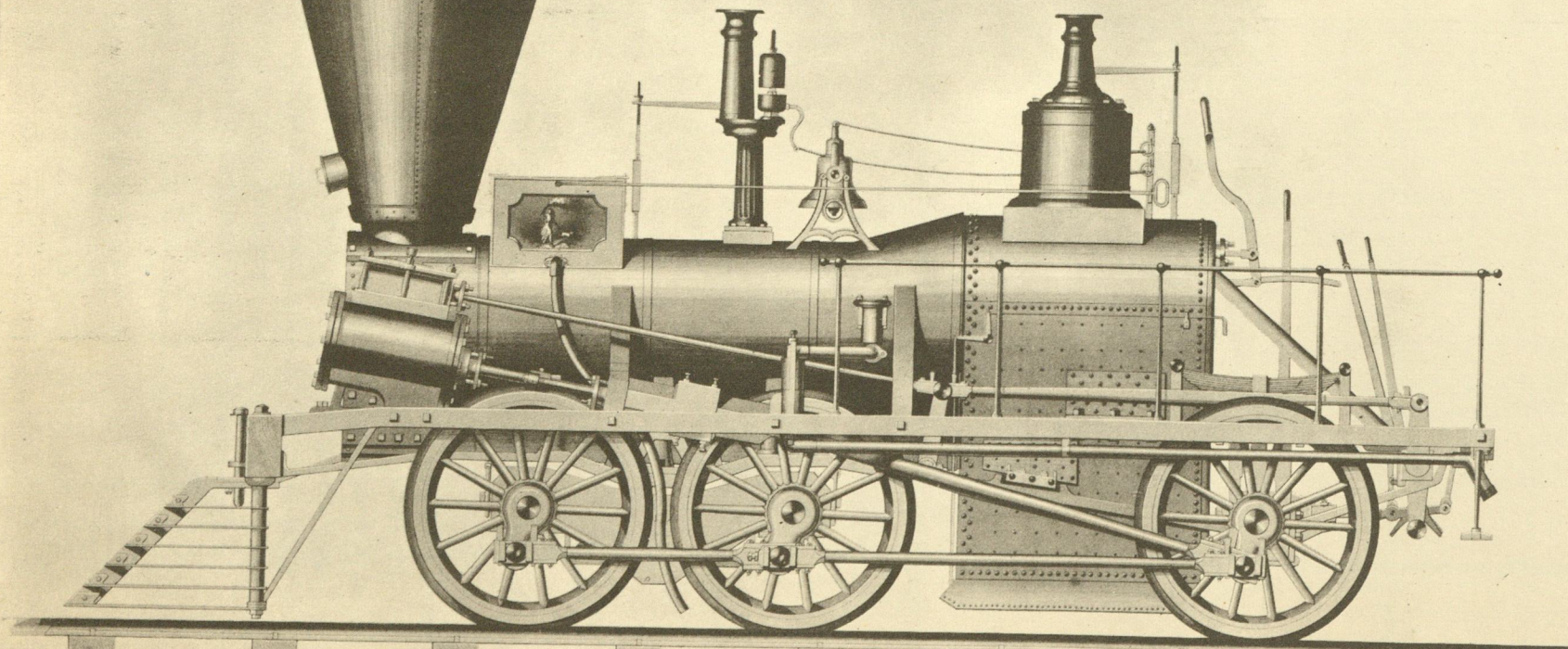
gauge 3'6"

1925

Construction No. 58,703

M.W. BALDWIN & Co.
LOCOMOTIVE BUILDERS
PHILADELPHIA

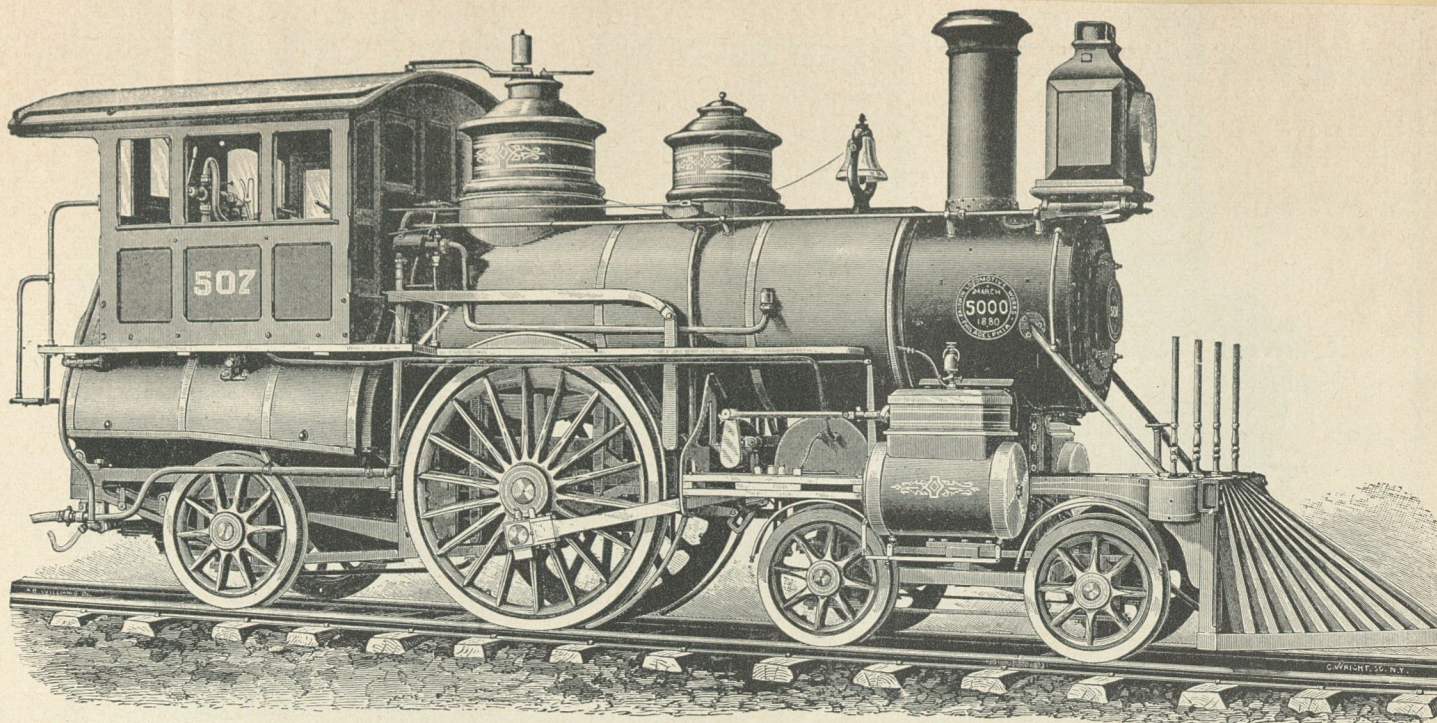
Built 1842. First of the very
successful flexible beam truck
locomotives



FREIGHT LOCOMOTIVE ENGINE (REV'D)

ick Cer

Clos. No.



No. Sold Amount Clos. No. Sold Amount

Fast Passenger Locomotive

A Baldwin Experiment of 1880

BACK in 1880 the Philadelphia
& Reading (now Reading Company)
wanted a locomotive to handle high-
speed passenger traffic over the Bound
Brook line between New York and
Philadelphia, and an order was placed
with the Baldwin Locomotive Works.
Baldwin officials at that time were
worrying about excessive breakage of
crank pins and side rods, and deter-
mined that they would do away with
side rods altogether in designing this
locomotive; it would have only one
pair of driving wheels.

This, of course, introduced new
problems. With only one pair of driv-
ing wheels, the engine must either be
very "slippery" because it had less
weight on drivers than a four-driv-
er engine, or else it must carry an
excessive load on the one pair of
drivers.

Baldwin's William P. Henszey
thought he had an answer to the prob-
lem: he would design the engine so
that it could utilize 45,000 pounds on
the drivers when starting, and then
switch to 35,000 pounds on drivers
after the train gained momentum. He

accomplished this feat by installing
power-controlled equalizing levers
between the driving and trailing
wheels. By operating the mechanism
the engineer could subtract 10,000
pounds from the weight on drivers
and add it to the weight on trailing
wheels.

The engine was built and was used
for a short time on the Bound Brook
line, where it made some very fast

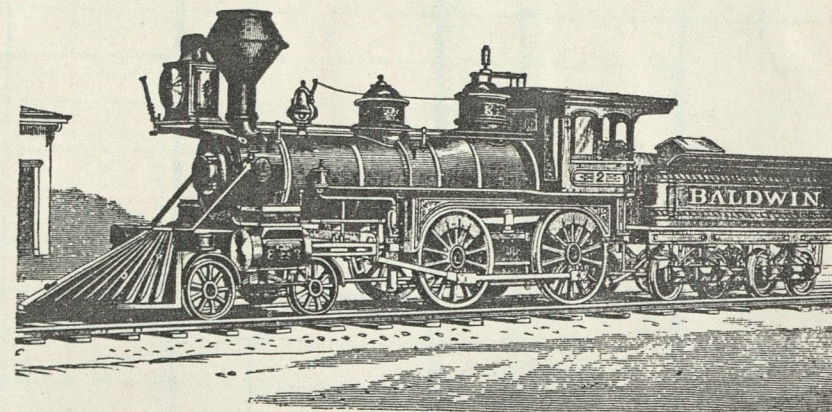
time. Meantime, however, the Phila-
delphia & Reading had run into finan-
cial difficulties and was obliged to re-
turn the engine to the builders. It was
later resold to the Eames Vacuum
Brake Company and was sent to Eng-
land to demonstrate the Eames brake,
with which it was equipped.

Baldwin never considered its five
thousandth engine much of a success,
and never built another like it.

Principal dimensions

Builder	Baldwin Locomotive Works
Built for	Philadelphia & Reading Railroad
Year built	1880
Driver diameter, inches	78
Cylinder diameter and stroke, inches	18 x 24
Weight in working order, pounds	85,000
Weight on leading truck, pounds	25,000
Weight on drivers, pounds	35,000
	45,000
Weight on trailing truck, pounds	25,000
	15,000
Wheelbase	21'-1"

BALDWIN LOCOMOTIVE WORKS.



Burnham, Parry, Williams & Co.,

PHILADELPHIA,

MANUFACTURERS OF

LOCOMOTIVE ENGINES

Adapted to every variety of service, and to the Economical use of
Wood, Coke, Bituminous or Anthracite Coal as fuel.

MINE LOCOMOTIVES,

Locomotives for Iron Mills, Furnaces, Con-
tractors' Use, and

Locomotives for Narrow Gauge Railways.

Illustrated Catalogue of Narrow Gauge Locomotives fur-
nished on application.

Clos. No. Sold Amount Clos. No. Sold Amount

os. No. Sold Amount Clos. No. Sold Amount

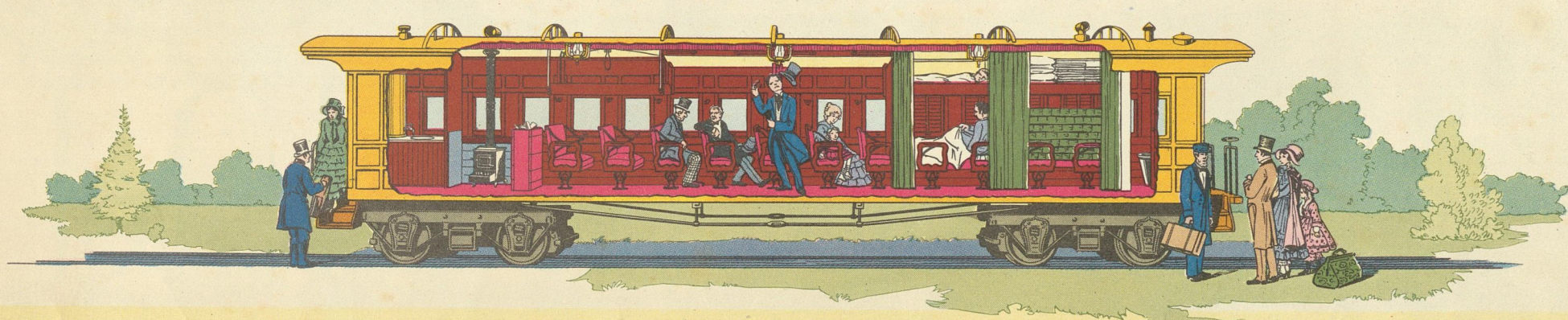


© 1937, THE PULLMAN CO.

★ Between 275 cities sleeping cars provide overnight service for more than 40,000 guests a night.

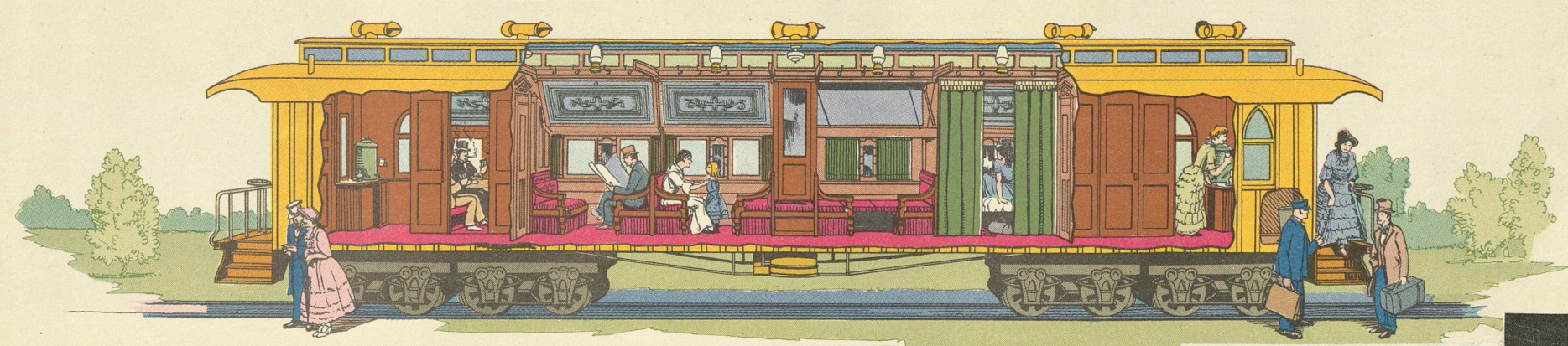
1859

"OLD No. 9" THE FIRST PULLMAN CAR The first Pullman sleeper, built 1859, was a reconstructed day coach, 40 feet long or about half the present length. Except wheels and axles, it was practically all wood. The roof was flat and so low a tall man was liable to bump his head. The seats were immovable; two small wood-burning stoves furnished heat. Lighted with candles, it had at each end a small toilet room large enough for one person, with tin wash basin in the open and water from the drinking faucet. There were ten upper and ten lower berths; mattresses and blankets, but no sheets. But it was the best yet.



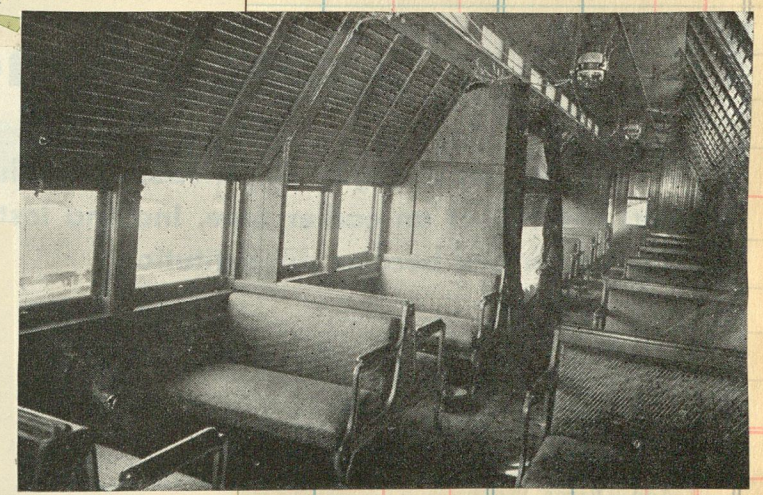
1865

THE FIRST REAL PULLMAN SLEEPING CAR First modern sleeper, built 1865, THE PIONEER; much longer, higher, wider, than predecessors; railroad bridges and platforms were changed to permit its passage. Here first came the raised upper deck and folding upper berth. Heated from hot air furnace under floor; lighted with candles, ventilated through deck windows. Two compartments at each end; eight sections; roomy washroom; black walnut woodwork, much inlay and many mirrors. Fully carpeted; French plush upholstery; good beds, ample bedding. Note the 16 wheels: an experiment tried at this period but later abandoned in favor of 12.



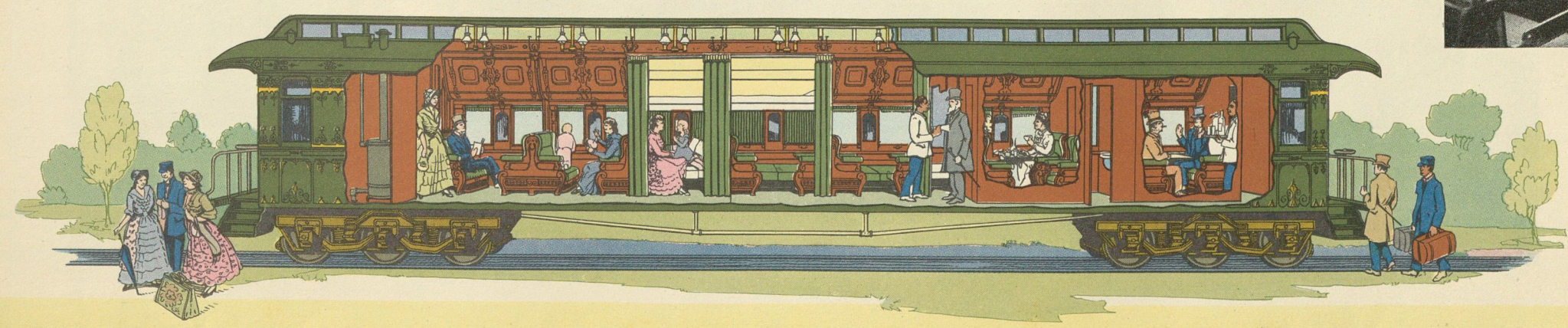
AS EARLY as 1850 a predecessor of George Pullman stacked the traveling public three deep in his nifty curtained palaces on wheels. Sleep walkers were discouraged by a sharp rap on the head before they could raise themselves to a sitting position

Quite unlike many of the ornate cars of its period this sleeping car of the 1870's offered only the barest of comforts. This was used in immigrant or second class service in the western part of the country.



1876

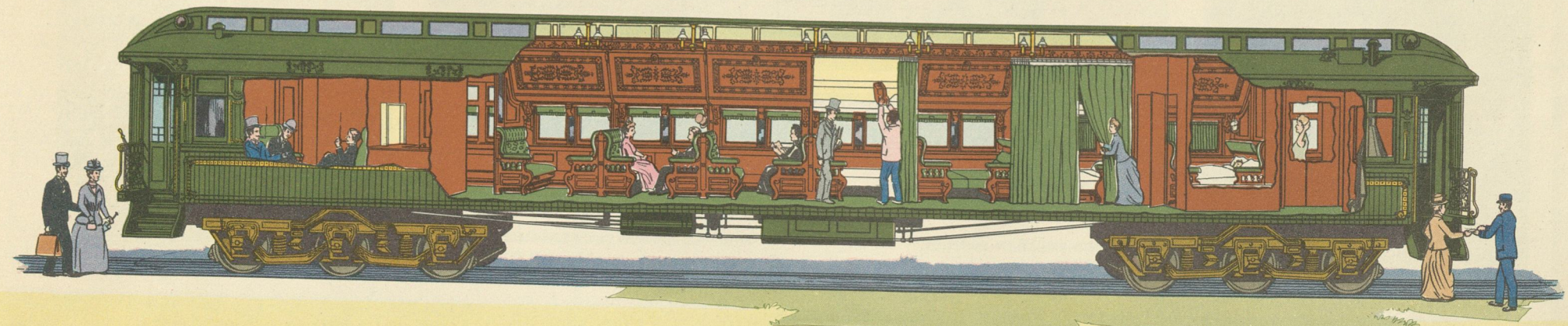
THE STEADY MARCH OF PROGRESS CENTENNIAL YEAR—1876—opened a period of further progress. The car's length grew from 58 to 70 feet. Oil lamps superseded candles. Air brakes appeared, making for greater speed and safety. A hot water heating system replaced stoves and furnaces. Six-wheel trucks were definitely adopted and overhead tanks with gravity supply system afforded water. Interior finish was in walnut, with carving, inlaying and lacquer work characteristic of the period.



SELLER
DATE
FORM
DESTINATION
Amt.

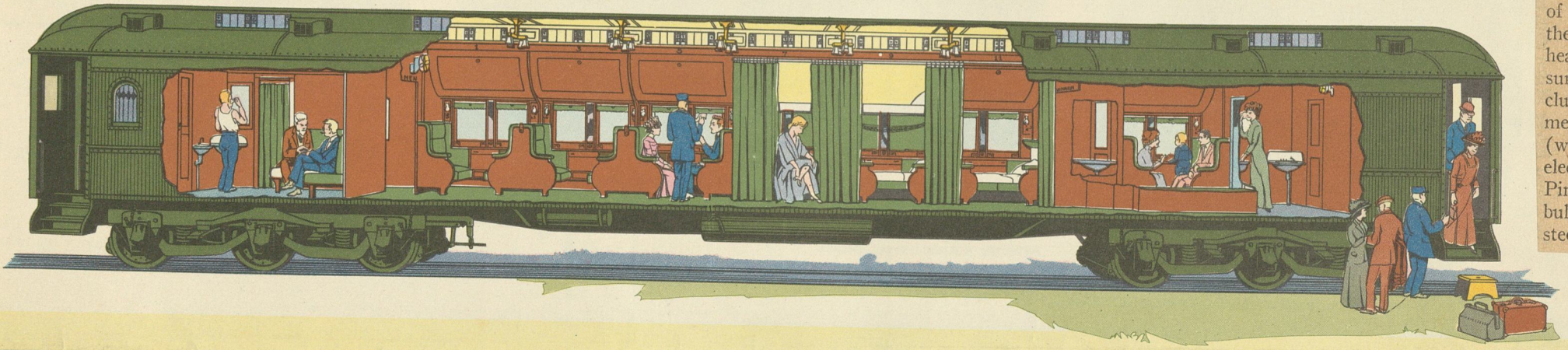
1887

THE CAR VESTIBULE APPEARS The car vestibule, marking an historical advance, appeared in 1887, strictly a Pullman invention. At first it merely enclosed a narrow passage between cars, to be widened later to full car width. It greatly enhanced comfort and safety. With twelve sections, drawing room, and smoking room, high backed seats, mahogany finish, much carving and ornamentation, higher windows, rich carpets and upholstery, and increasing elegance throughout, the Pullman was now blossoming into the full glory of the later Victorian period.



1907

THE ALL-STEEL CAR APPEARS No other advance in car building made so much for safety, up to this date, as all-steel construction. Following the first experimental steel car, in 1907, the type was adopted in general service in 1910. Length 74 feet; full vestibule; 12 sections, drawing room and smoking room; steel sheathed outside; electric light from axle device; low pressure vapor heat system. Interiors were by this time becoming more quiet, moderate and tasteful, with plain mottled finish, green frieze plush upholstery and green carpets. This was the period of standardization.

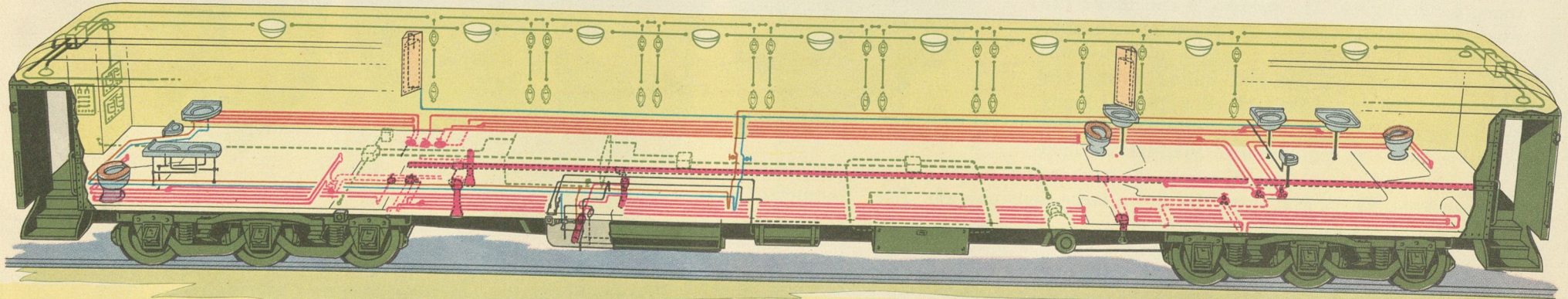


WHEN did the Pullman Company build its first steel Pullman car? In 1907 the steel sleeper *Jamestown* was completed for display at the Jamestown exhibition. The underframe, superstructure, interior partitions, etc., were of steel; exterior plates being secured to the side frame members by countersunk head rivets, thus giving a smooth outer surface. Other features of the car included brass-frame window sash, white metal washstands, vapor steam heating (with an auxiliary hot water system), electric lighting (supplemented with Pintsch gas mantle lamps), wide vestibules, and six-wheeled trucks with cast steel frames.

1917

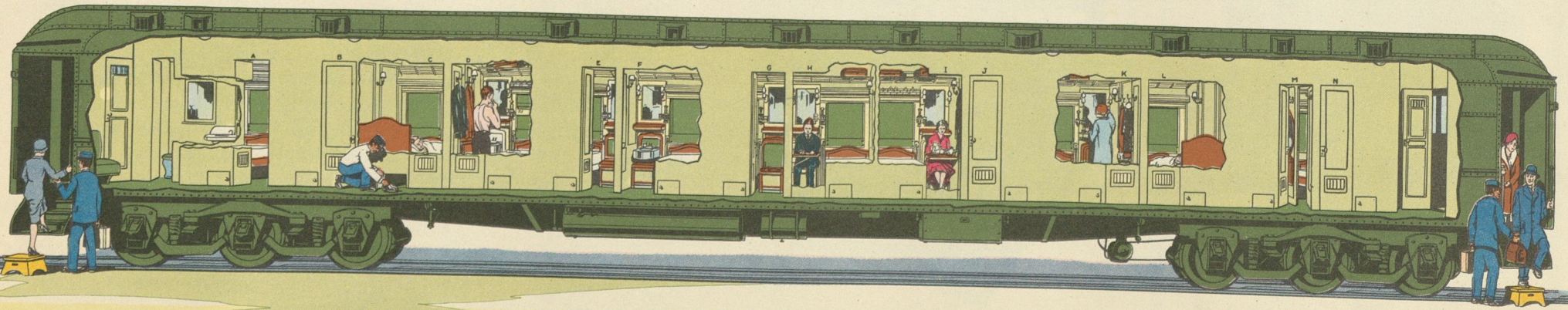
WATER, HEAT AND LIGHT CIRCUITS By 1917 the Pullman car contained innumerable hidden mechanisms, concealed devices, ingenuities of construction, electrical wizardries and accessories, created and installed by experts to give the maximum of comfort and luxury to the twentieth century traveler. A single Pullman car contained nearly a mile of insulated copper wire; over half a mile of pipes, and conduits; a maze of batteries, switches, valves, switch boards, dynamos, motors, ventilators, push buttons, call bells, regulators, signaling apparatus, controls, and other appurtenances.

COLD WATER HOT WATER STEAM ELECTRICAL UNITS



1927

THE SINGLE ROOM CAR The single room car, for over-night journeys, is a particular luxury to a large class of travelers. It contains 14 rooms, each for a single passenger, with full toilet facilities, stationary bed across the car, folding washstand with mirror and side lights above; drop shelf for writing or serving meals. Luggage space under bed, and in roomy racks. Cheval mirror inside door. Air intake in door, electric fan, thermos water bottle, individual heat control. The bed has box springs and spring mattress. Two or more rooms can be used *en suite* if desired.

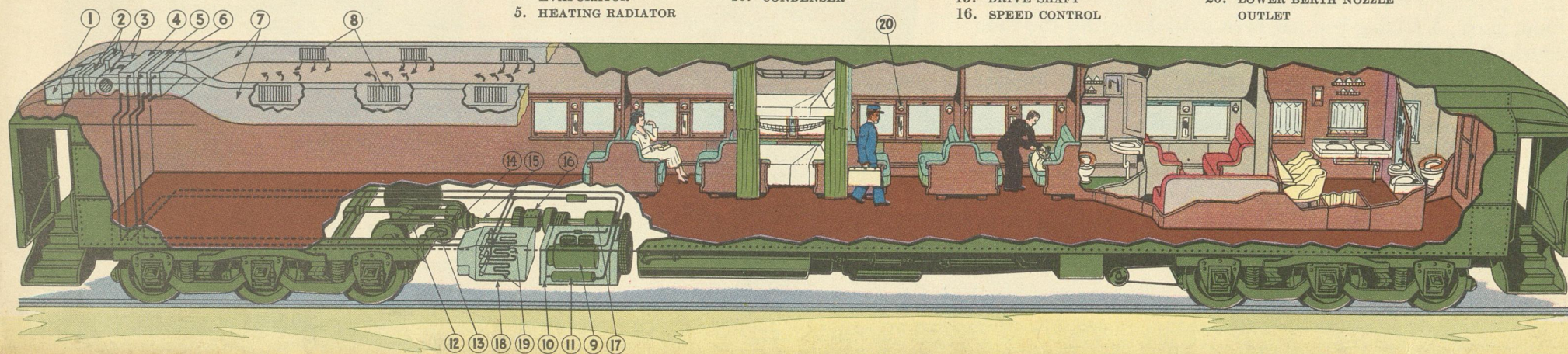


Total
Add—Error
Deduct “
Total
Add Working Fund
Total to be Accounted for
Cash to Agent
Agent’s Signature
Cash to next Seller
Next Seller’s Signature
Total Accounted for

1929

AIR-CONDITIONING SYSTEM With the introduction of the first successfully operated air-conditioned sleeping car in 1929, the Pullman Company rapidly added this innovation in travel comfort to its equipment and by 1937 operated over 50% of all the air-conditioned passenger cars in the United States. The mechanical devices employed in air-conditioning indicated in the car are as follows:

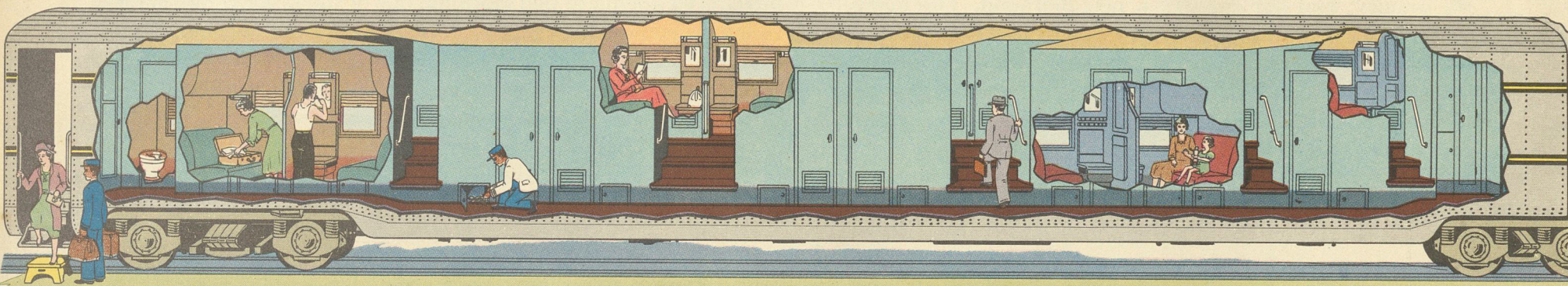
- | | | | |
|---------------------|--------------------|---------------------|------------------------|
| 1. INTAKES | 6. HOLDOVER COIL | 11. RECEIVING TANK | 17. STANDBY MOTOR |
| 2. FILTERS | 7. DUCTS | 12. DOUBLE PULLEY | 18. TANK FOR AUXILIARY |
| 3. BLOWERS | 8. GRILLED OUTLETS | 13. DRIVE BELTS | HOLDOVER SYSTEM |
| 4. COOLING COIL OR | 9. COMPRESSOR | 14. BEVEL GEAR UNIT | 19. COOLING COILS |
| EVAPORATOR | 10. CONDENSER | 15. DRIVE SHAFT | 20. LOWER BERTH NOZZLE |
| 5. HEATING RADIATOR | | 16. SPEED CONTROL | OUTLET |



1936

THE DUPLEX UNIT—LIGHTWEIGHT, STREAMLINED, ARTICULATED CAR

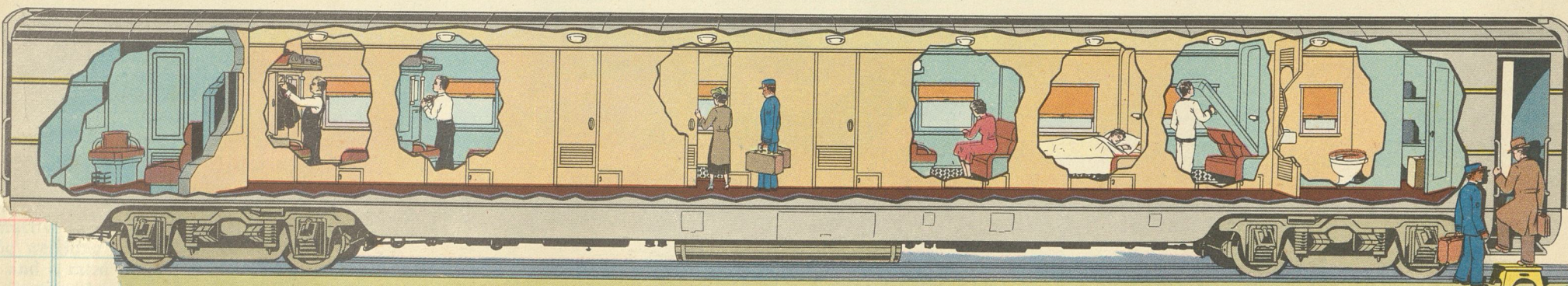
The unit is constructed so that it can be used in a train of regular standard type cars. The car is of alloy steel in the body construction. This unit known as a "duplex" car contains 16 rooms. In addition to two regular bedrooms there are 14 single rooms, equally divided between rooms on the floor level and others reached by three steps. The car is air-conditioned with individual temperature and ventilation control for each room. The ultra-modern in car construction.



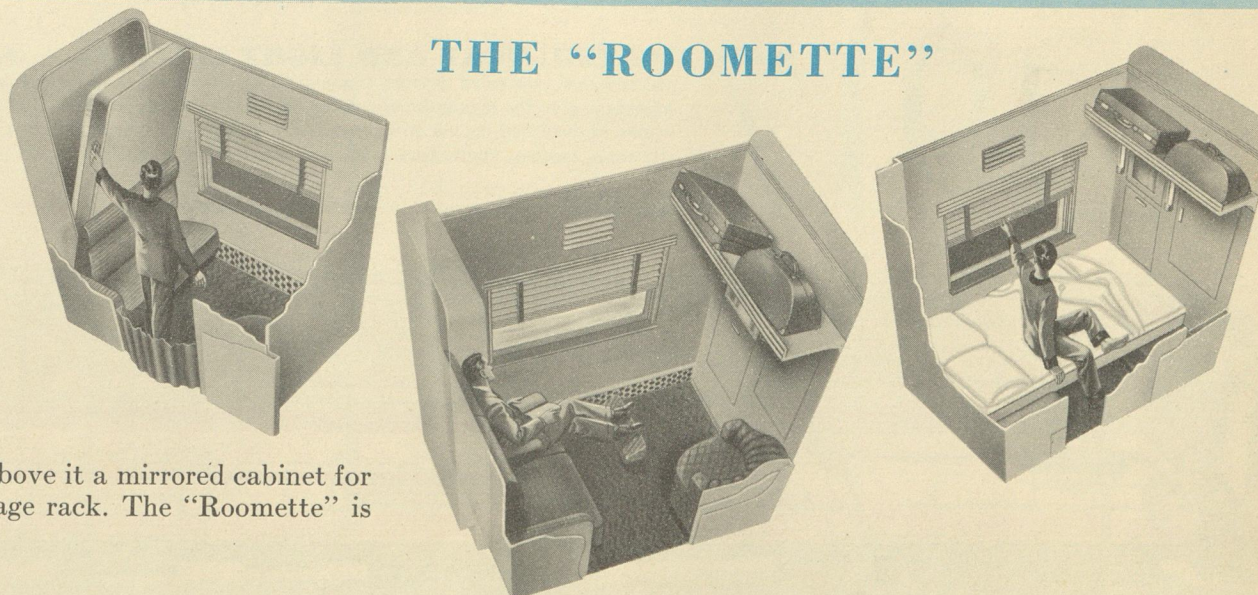
1937

THE ROOMETTE CAR

The Pullman Company's latest innovation in travel comfort is the Roomette car. Each Roomette is a small completely enclosed private room, containing one bed which folds into the wall at one end of the room and a sofa-seat for daytime service. In this car there are 18 Roomettes, each with complete toilet facilities, individually air-conditioned and separate control of heat and light. The car is of alloy steel construction, air-conditioned and contains all the modern appurtenances for modern Pullman travel comfort.



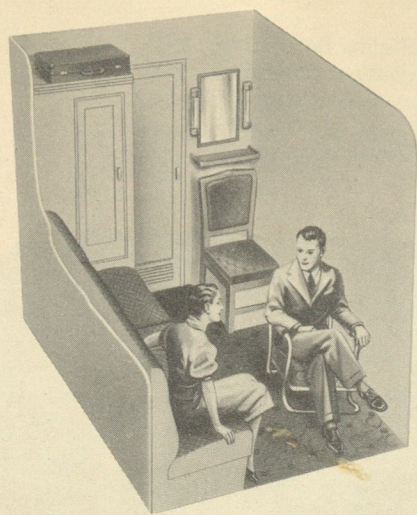
THE "ROOMETTE" is a small, completely enclosed, private room containing one bed. Eighteen "Roomettes" can be placed in one Pullman. In daytime the bed folds into the wall at its head, and the passenger has a sofa-seat, with ample space for lounging. The passenger can make the whole room space available by returning the bed to its niche in the wall, and a safety ratchet eliminates any danger of the bed falling during the operation. The size of the bed will appeal, it being 6 feet 5 inches in length. There are individual toilet facilities, and the regulation of ventilation, heat and light; a washstand that folds into the wall, and above it a mirrored cabinet for toilet articles. There is a wardrobe and a large luggage rack. The "Roomette" is completely air-conditioned.



CUT HERE
To Make
Short Sheet

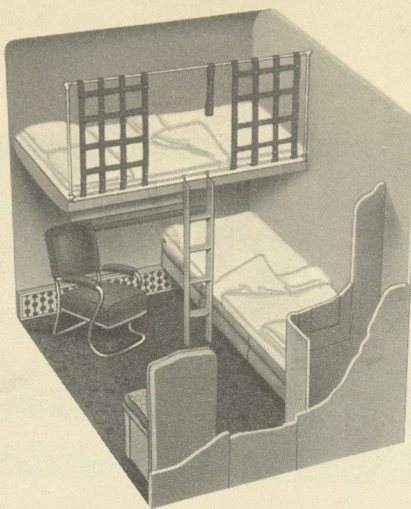
51

SELLER
DATE
FORM
DESTINATION
Amt.



THE NEW COMPARTMENT
PREPARED FOR DAYTIME OCCUPANCY

THE NEW COMPARTMENT
READY FOR NIGHT TIME SERVICE



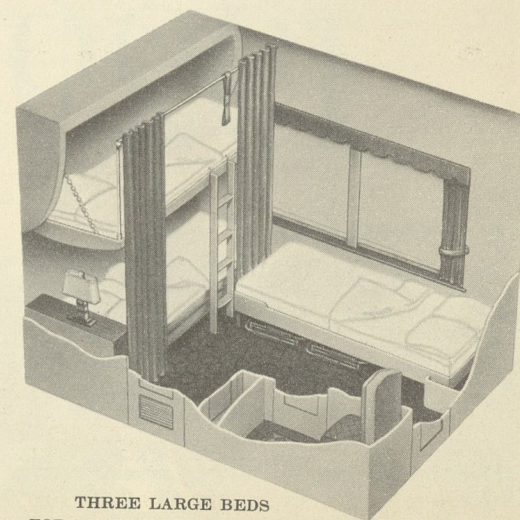
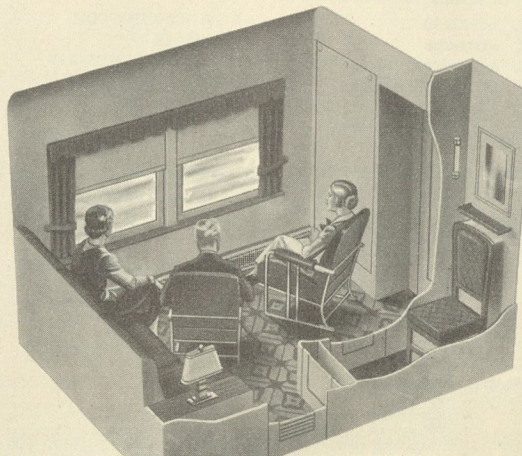
THE NEW COMPARTMENT

THE NEW COMPARTMENT affords additional space comfort through rearrangement. The section seats by the window are replaced by a long sofa occupying nearly the entire width of the room. The upper berth remains above the window and is at right angles to the convertible sofa-bed. There is space between the sofa and the opposite wall for a comfortable lounge chair. At night the chair is placed out of the way, but always available. Both beds are 6 feet 5 inches in length and of standard berth width. There is an electric fan, individual regulation of lighting and ventilation, and automatic thermostatic heat control. Each compartment has a wardrobe for clothes, a shoe-box, separate toilet facilities and the latest lighting fixtures.

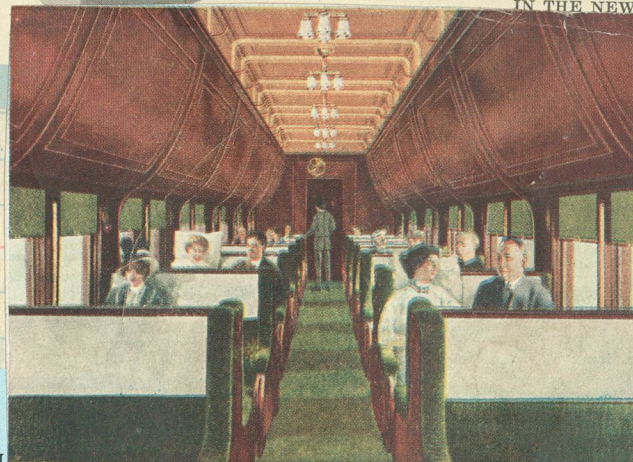
THE NEW DRAWING ROOM

SPACIOUSNESS has been attained by rearrangement of facilities, such as absorbing into the room space previously occupied by the toilet annex and the entrance lobby, and then building a very compact annex in the aisle corner of the room itself. A folding bed has been substituted for the fixed couch, the section seats by the windows have been removed with substitution of a long sofa, convertible into an equally long bed (with an upper berth) along one wall of the room. All three beds are 6 feet 5 inches long and of standard berth width. For day travel the wall bed disappears, the upper berth is put away and the third bed becomes a sofa. This leaves ample space for two comfortable, movable lounge chairs. In addition, all of the accessories and facilities in the "Roomette" and the New Compartment are included in the New Drawing Room.

A COMMODIOUS ROOM
FOR DAYTIME OCCUPANCY FEATURES
THE NEW DRAWING ROOM



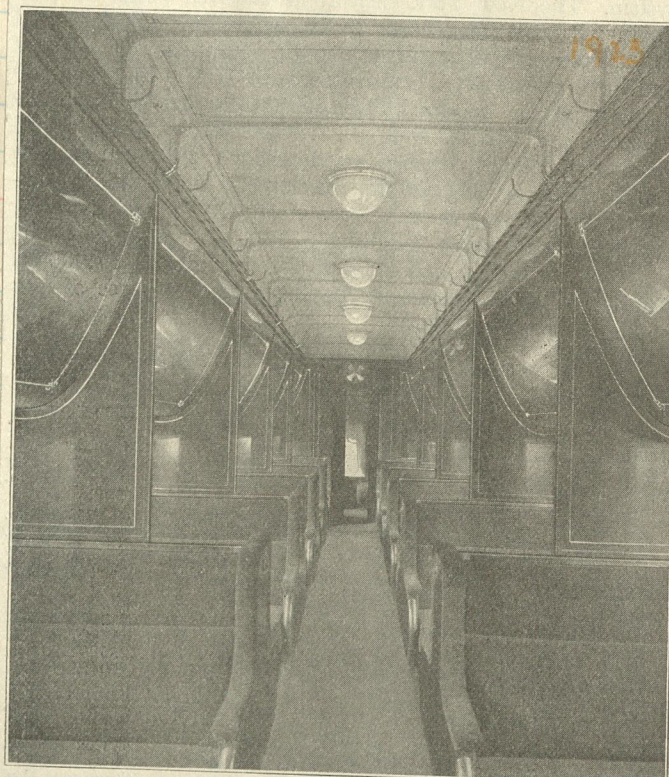
THREE LARGE BEDS
FOR NIGHT TIME OCCUPANCY
IN THE NEW DRAWING ROOM



INTERIOR, STEEL SLEEPING CAR

Permanent Head Boards Increase 1923 Privacy of Pullman Sections

THE FIRST STEP in the development of greater privacy for sleeping car passengers during the daytime, now being undertaken by the Pullman Company, is shown in the illustration. Some 60 standard Pullman sleeping cars are now in service equipped with permanent head boards which extend out from the side of the car for something more than half the width of the seat, so that the forward edges are flush with the top of the closed berths and the side walls of the upper deck. The permanent head board adds consid-

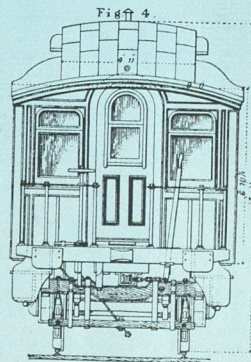
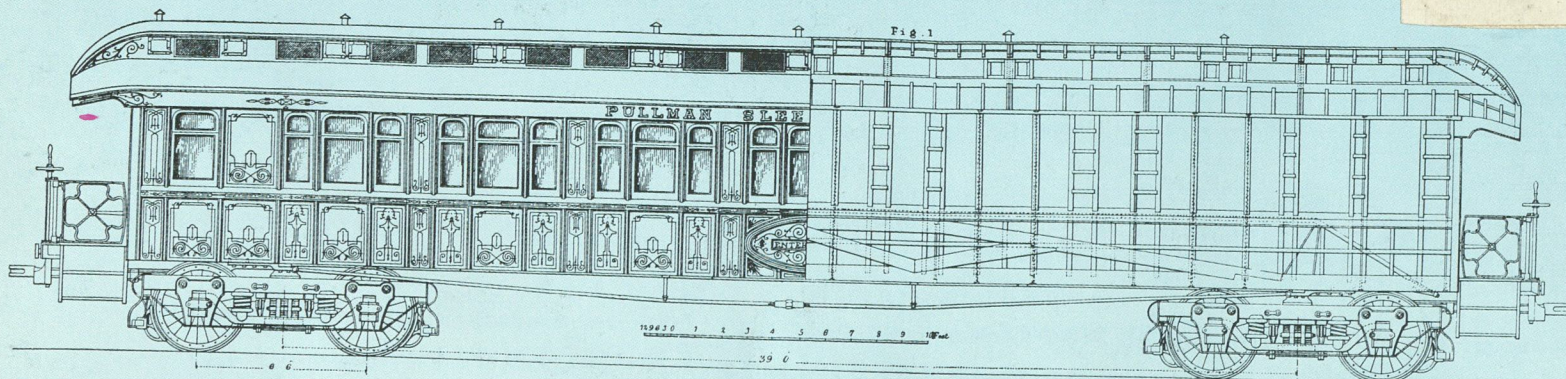


Sections of Standard Pullman Sleeping Cars Separated by
Permanent Head Boards

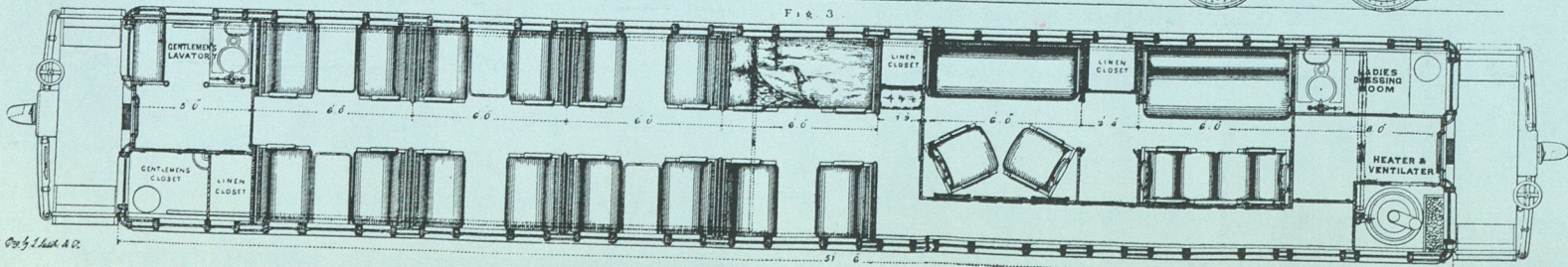
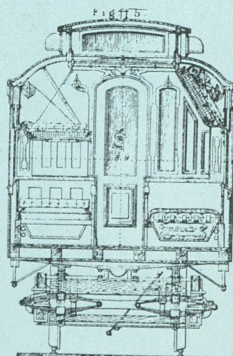
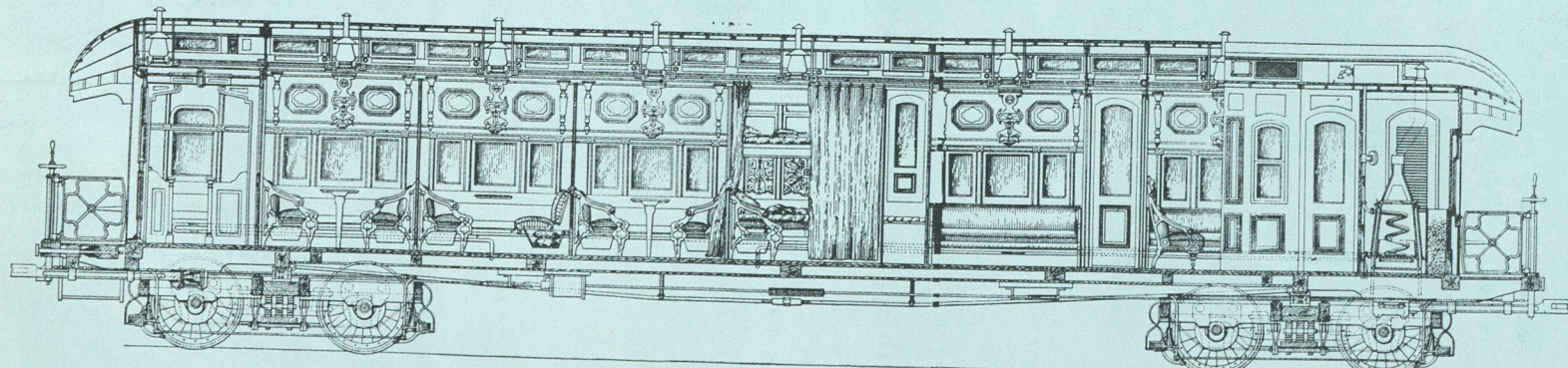
erably to the privacy of the standard section during the daytime. It also permits the occupants of each section to freely control the ventilation without causing drafts which may be displeasing to the occupants of adjoining sections. At night the partition is completed by locking a removable half head board on the rigid partition. The berths are made up in the usual way.

The arrangement illustrated has been received with favor by travelers wherever the cars of this type have been in service and experiments looking toward the further development of the idea are now under way at the Pullman Works, Chicago.

PULLMAN SLEEPING CAR FOR THE MIDLAND RAIL

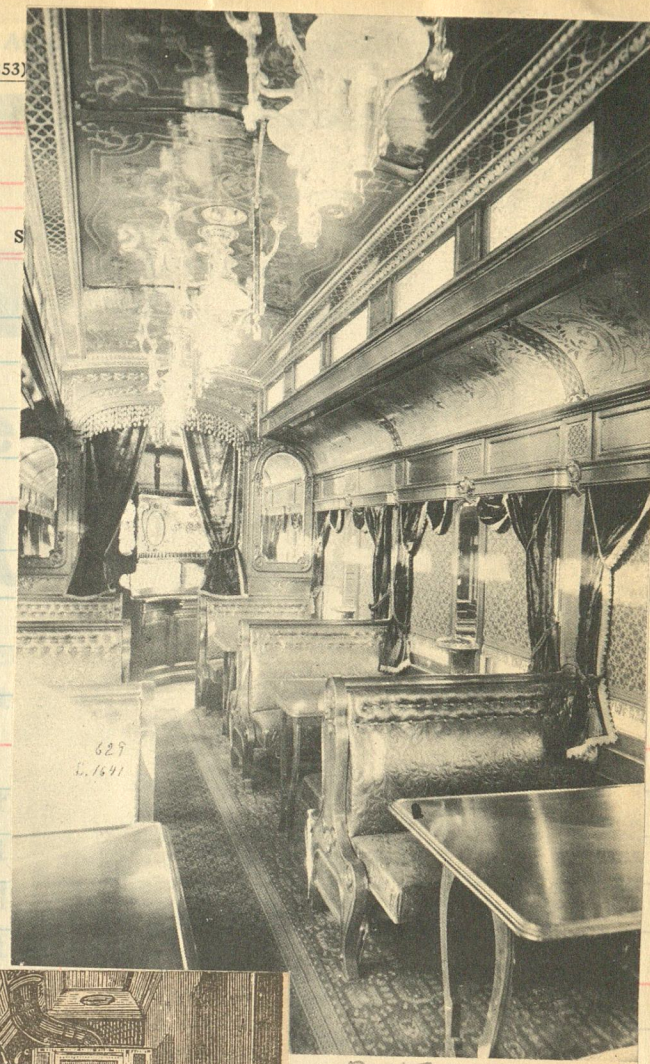


... Illustrated with nearly 800 photographs, drawings, and engravings



A vintage illustration of a Pullman train car, labeled "CHICAGO, FORT WAYNE, PITTSBURGH & NEW YORK" and "PULLMAN PALACE CARS". The car is red with yellow trim and features the number "76" in a red circle. Several people are standing on the platform in front of the car, including a man in a white suit and a woman in a yellow dress. A small dog is visible on the ground.

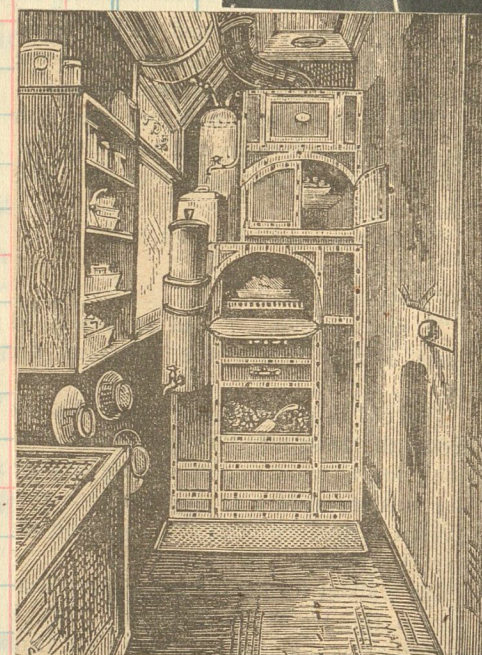
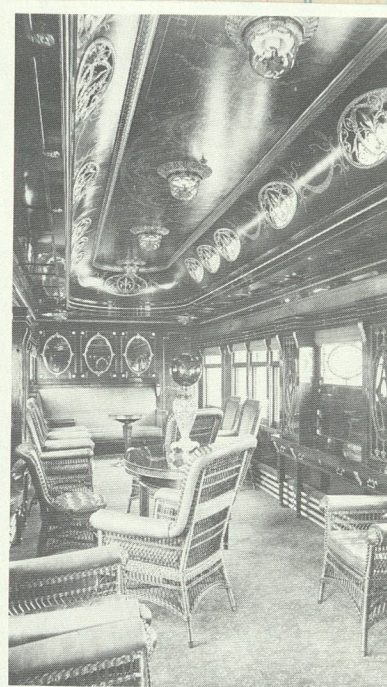
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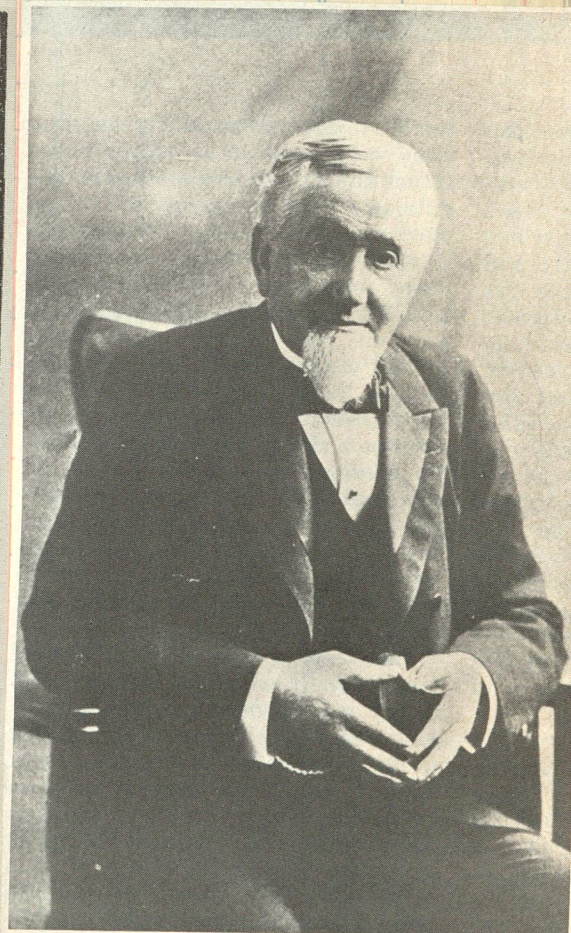
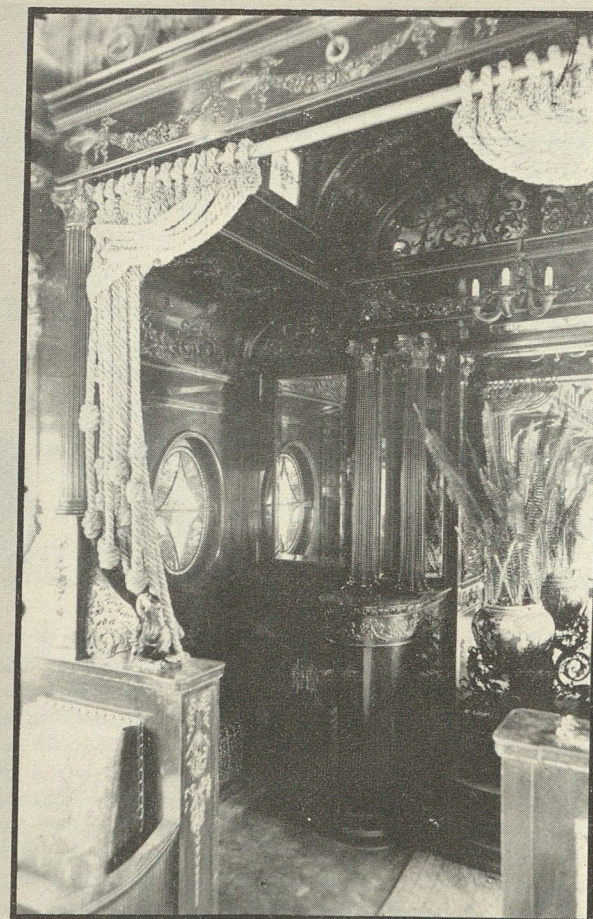
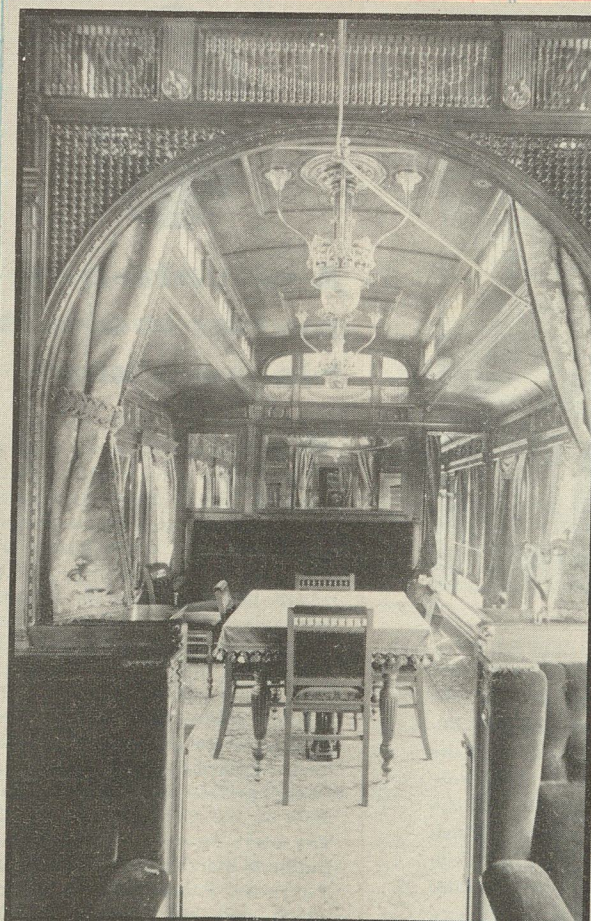
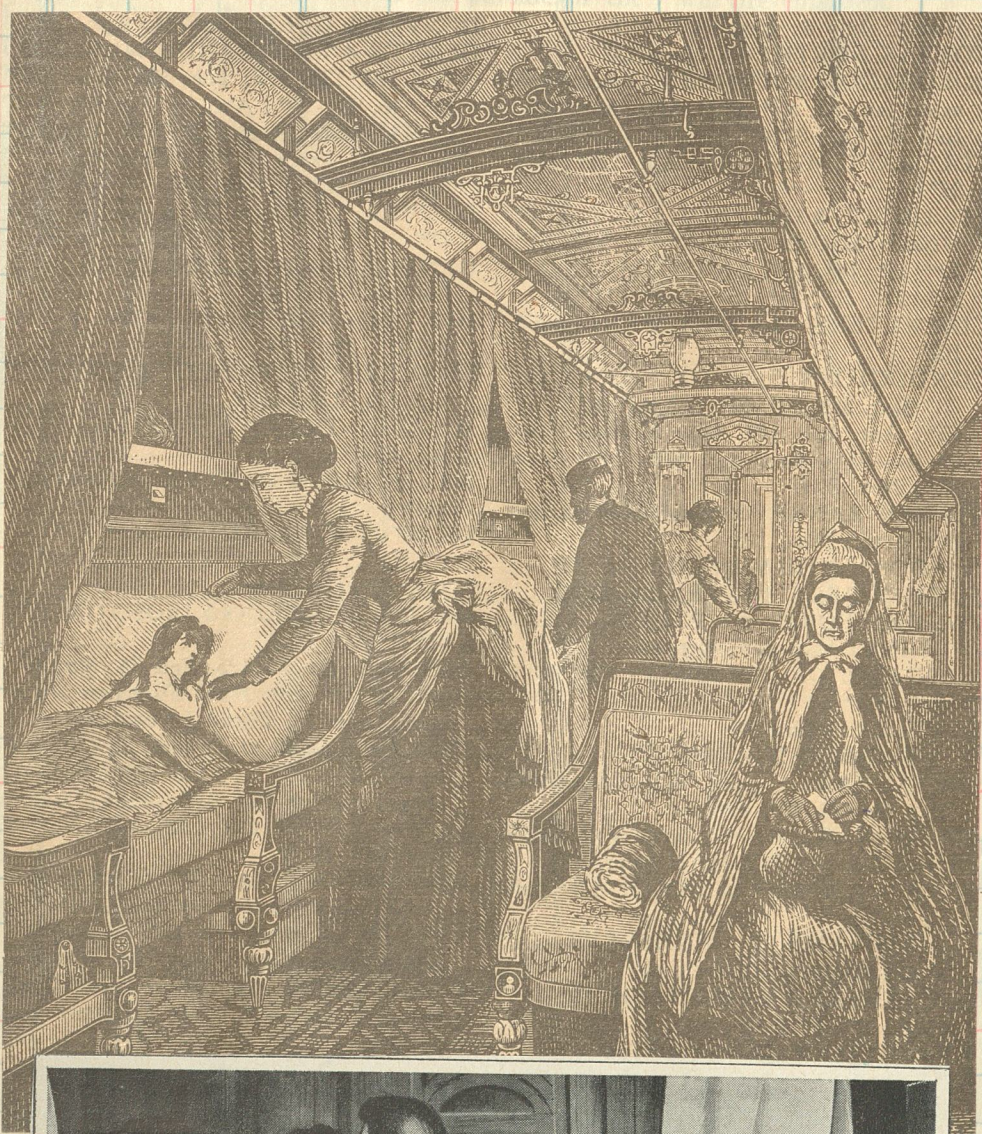
DINER
Courtesy The Pullman Company



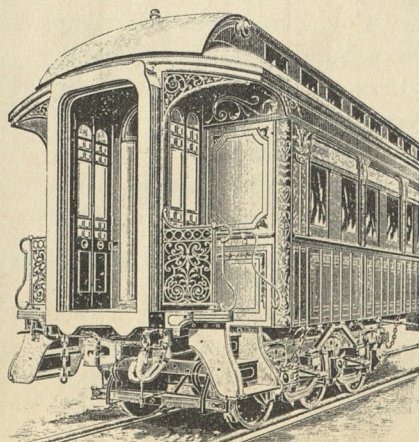
A detailed black and white illustration of the interior of a ship's dining room. The room features ornate wooden paneling, a large table set with a meal, and a decorative ceiling. The text "DINING ROOM" is visible at the bottom left and right edges of the illustration.



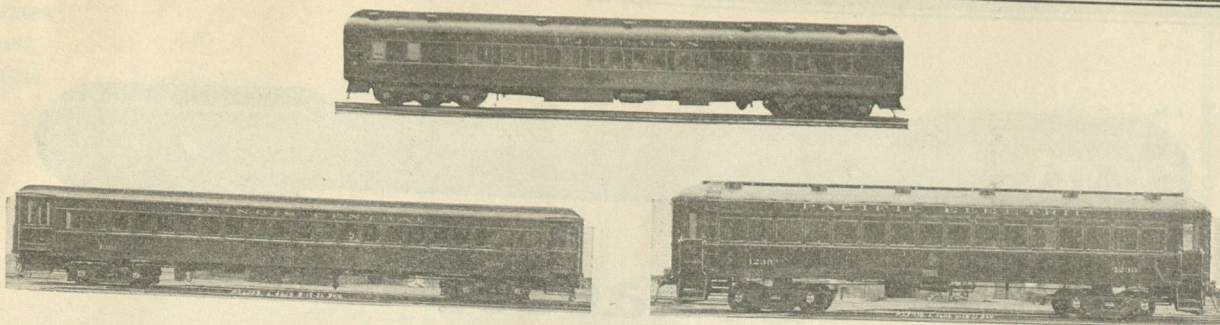
GRANDMA'S pantry had nothing on this well-ordered Pullman kitchen of long ago



George Pullman



One of the major contributions to the safety and speed of passenger travel in the late 19th century was the invention, by the Pullman Co., of the enclosed vestibule (below), first used in 1887. Narrow vestibules were used until after 1893, when the first car, a Pullman, with the full width of the platform closed in, was exhibited.



The House of Railway Cars

THE PULLMAN COMPANY

Creators, Builders and Operators of

Pullman Cars

SLEEPING

PARLOR

TOURIST

Designers and Builders of Steel, Composite and Wooden

Passenger and Freight Cars

For Steam or Electric Railroads

Manufacturers of

Car Parts and Appliances

For Every Class and Type of Car

Rebuilders of

Steel, Composite and Wooden Cars

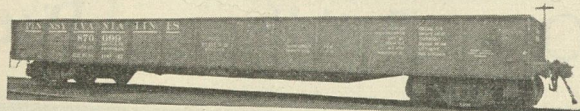
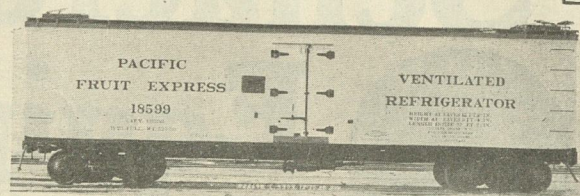
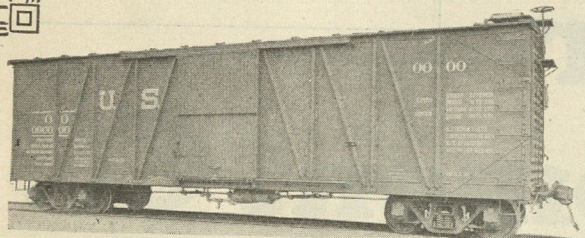
Heavy or Minor Repairs

Office: THE PULLMAN BUILDING, Chicago

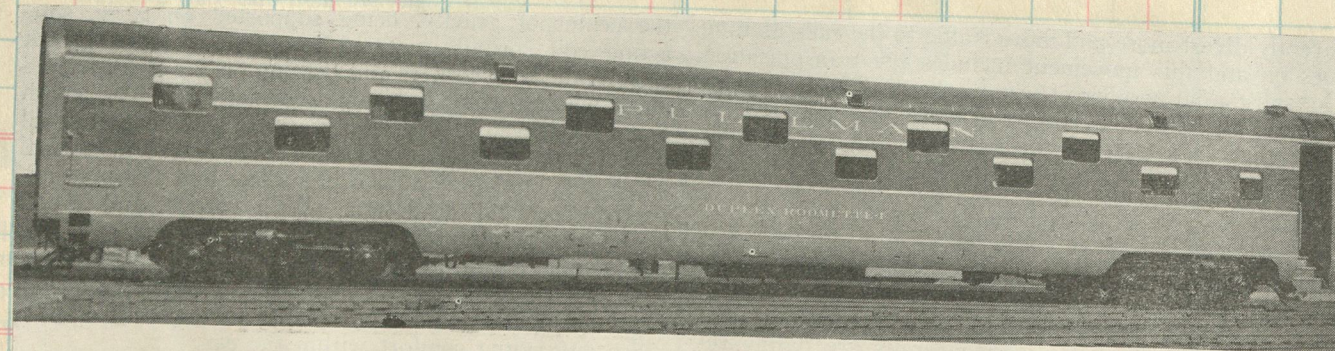
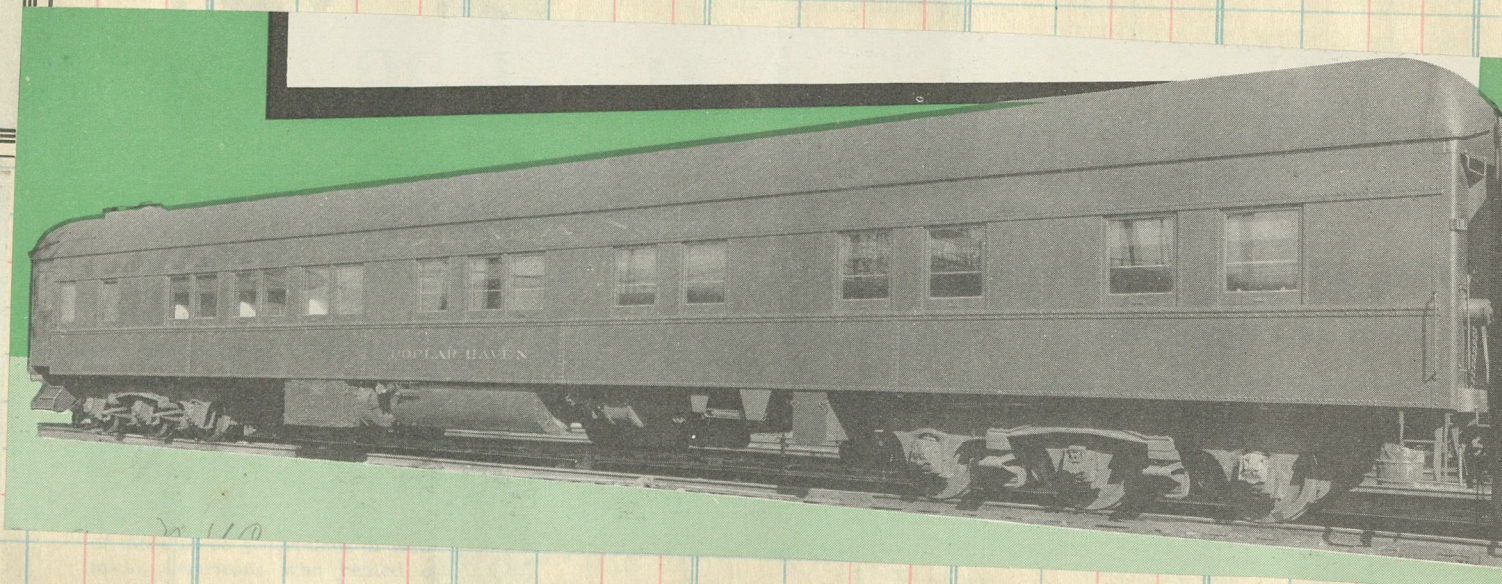
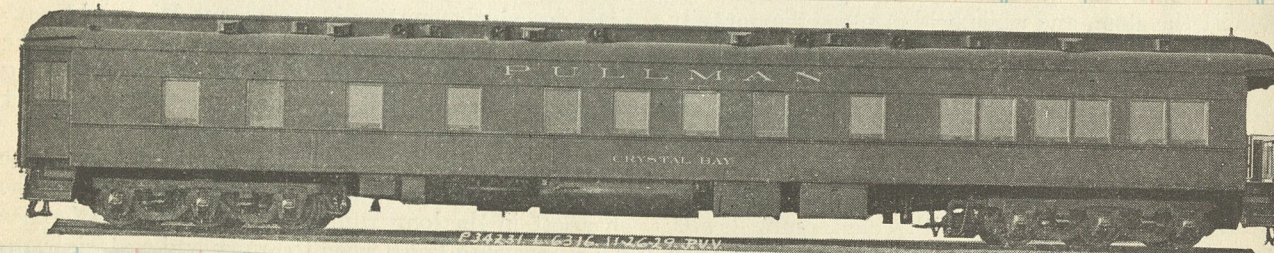
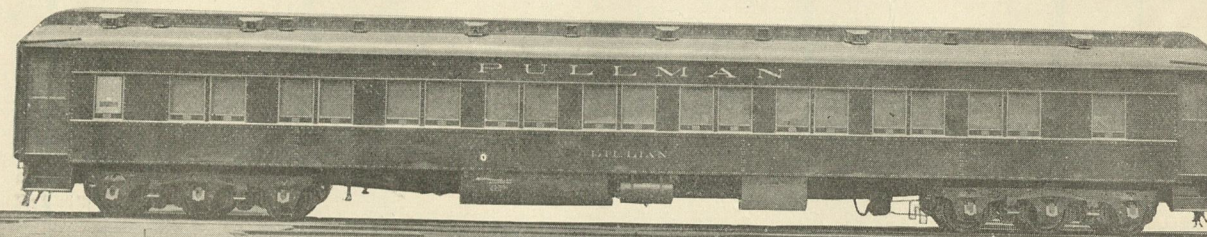
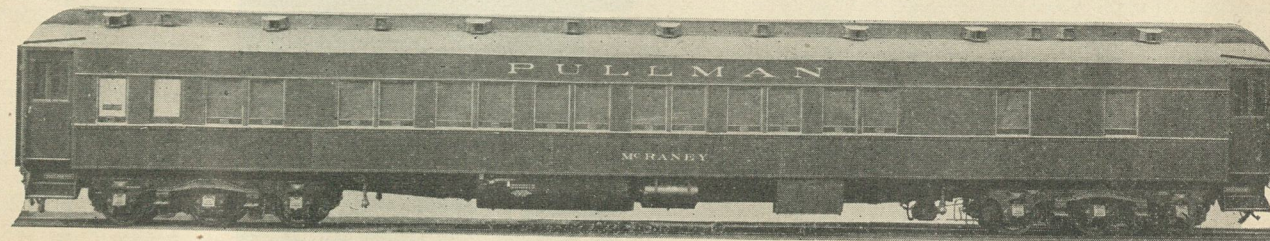
PULLMAN, ILL.
ESTABLISHED 1867

PLANTS

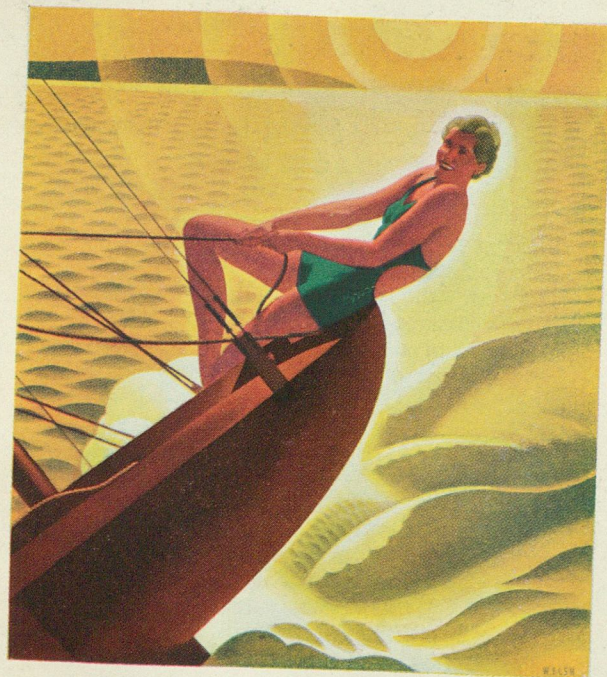
MICHIGAN CITY, IND.
ESTABLISHED 1852



Latest Type Pullman Sleeping Car 1920



New Pullman Duplex Roomette Car Placed in Service in 1942

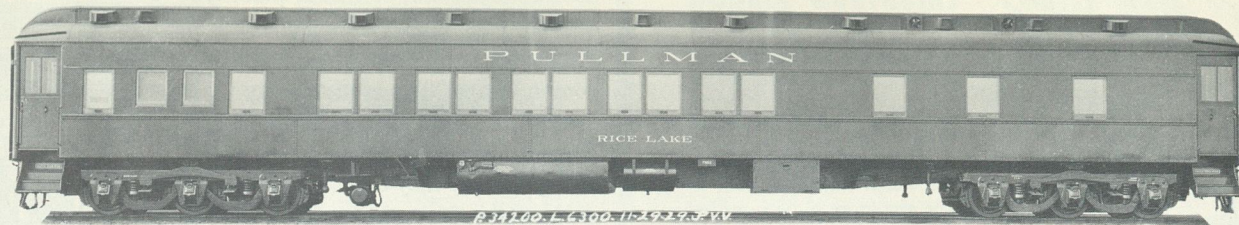


Speed to Winter
Playgrounds
in **PULLMAN**
SAFETY & COMFORT



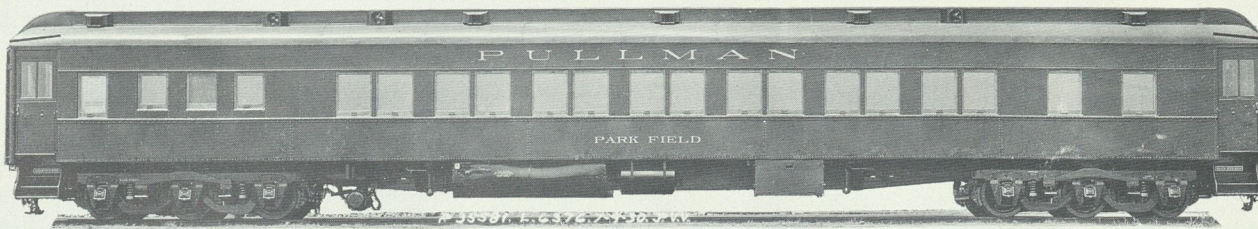
Speed to Winter
Playgrounds
in **PULLMAN**
SAFETY & COMFORT

Clos. No. Sold Amount



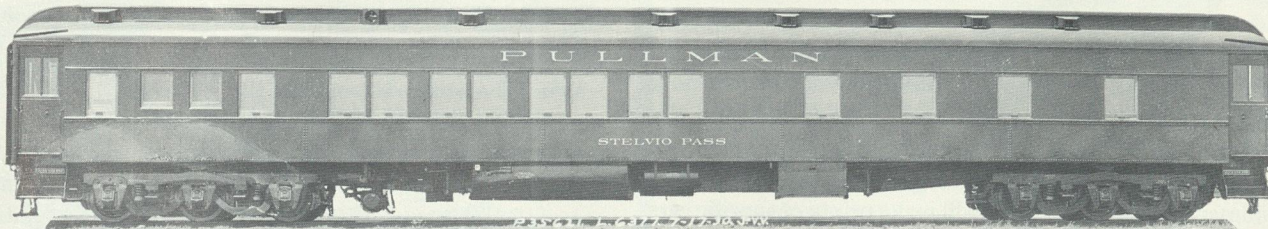
10-1-1

Smithsonian Institution Neg. No. 34200



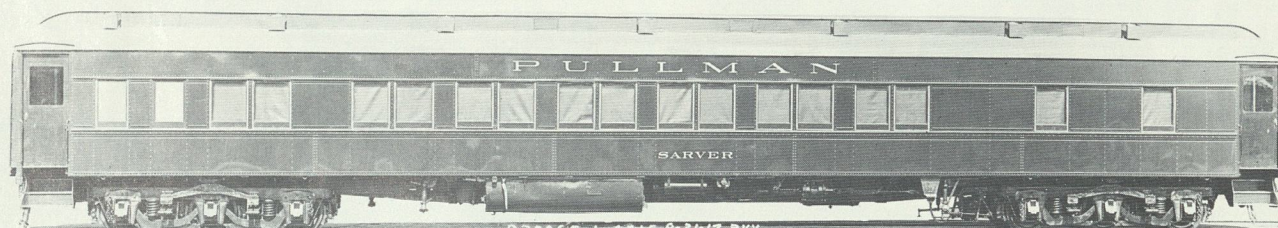
14 Section

Smithsonian Institution Neg. No. 35581



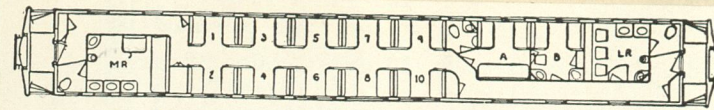
8-1-2

Smithsonian Institution Neg. No. 35621



12-1

Smithsonian Institution Neg. No. 31609

MR—Men's dressing room.
A—Drawing room.LR—Ladies' dressing room.
B—Compartment.

ANOTHER MILESTONE IN PULLMAN PROGRESS

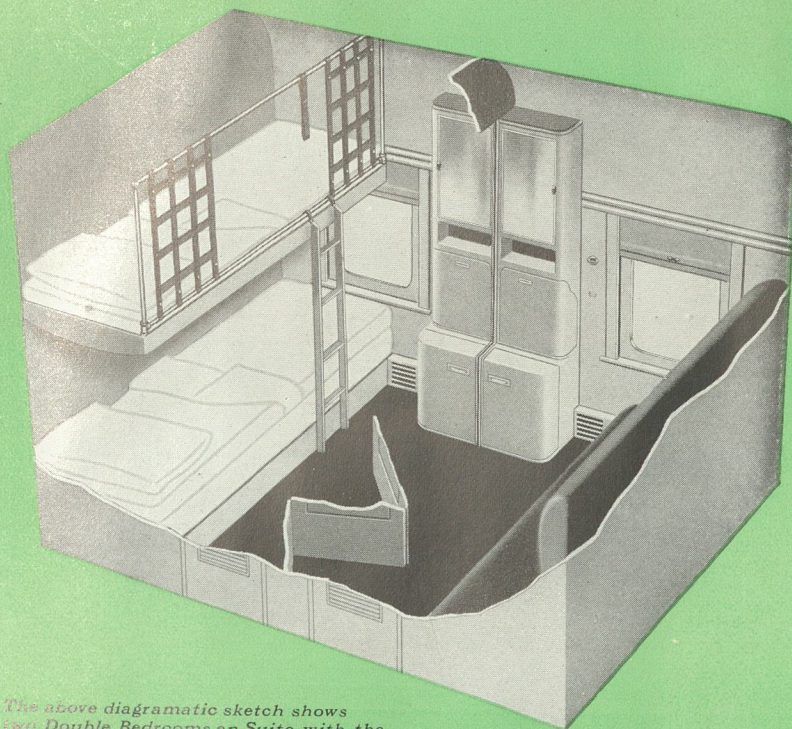
QUIET

IS REQUESTED FOR THE BENEFIT
OF THOSE WHO HAVE RETIRED

THE "QUIET" Sign has made a distinct hit with patrons of Pullman sleepers. It goes on duty at 9 p.m. in the smoking room and at the ends of the center aisle.

Its utility has appealed to some Canadian railroads and they have adopted this aid to slumber.

Pullmans operating in Mexico carry the plea in Spanish.



The above diagrammatic sketch shows two Double Bedrooms en Suite with the folding partition pushed back. One of them is prepared for night time occupancy, the other for daytime use.

inviting bed. Above the sofa is an upper berth which similarly makes down into a bed. The Bedroom affords toilet and lavatory facilities. A hinged desk provides a writing table as well as a serving table for meals. The room is equipped with electric lights, separate heat control, an adjustable ventilator in the door, and exhaust fans—all of which allow the occupant to regulate temperature to suit his desire. Each room is completely air-conditioned. The lower bed is 6 feet 5 inches long and the upper berth 6 feet 3½ inches.

A vacuum water bottle for ice water is included, as well as clothes hangers and full length mirrors. There is ample room for luggage beneath the sofa and in a luggage rack.

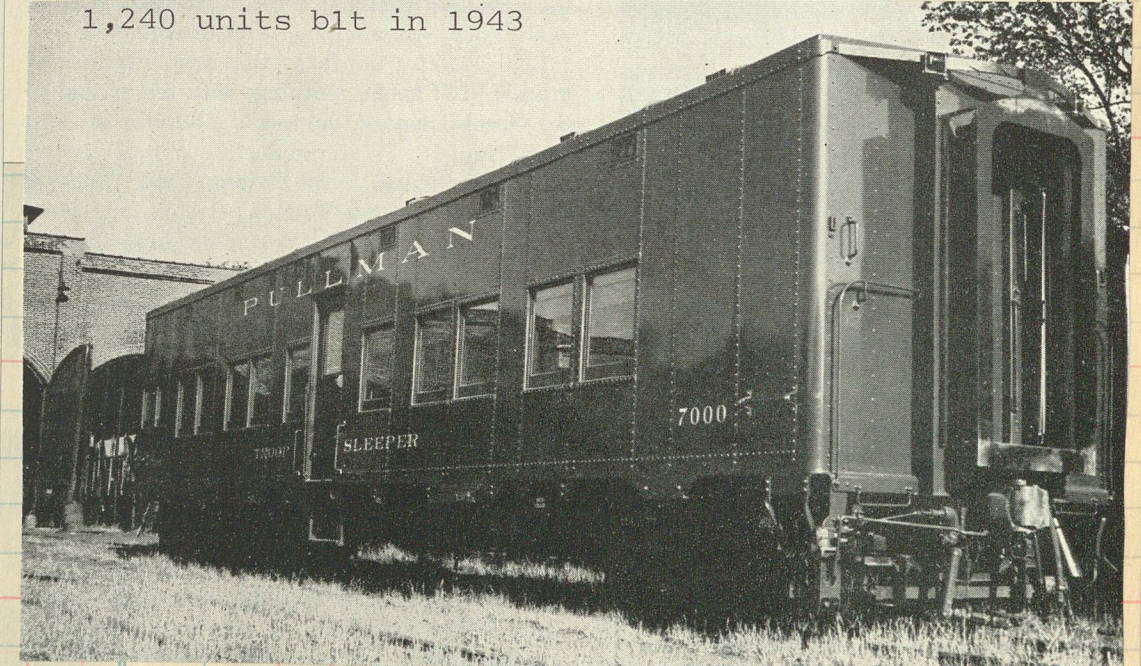
When purchasing Bedrooms en Suite, passengers have the advantage of all the facilities of a room accommodation in each Bedroom that can be transformed into one large room, as they desire.

Your local ticket agent, or the Pullman conductor or porter, will gladly give you further information upon request, indicating the cost for a particular trip on lines where Bedrooms are available.

A Bedroom Suite showing how the sofa becomes a sleep-inviting bed at night and the comfortable berth above the sofa.



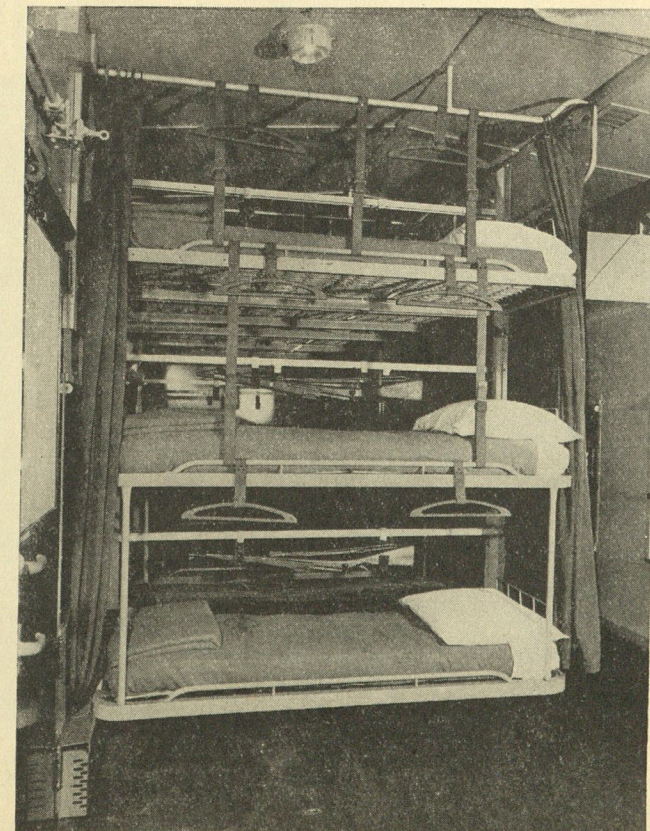
1,240 units b1t in 1943



THE PULLMAN BEDROOM SUITE

FOR the convenience of two, three or four passengers traveling together, The Pullman Company offers Double Bedrooms en Suite for added travel comfort. The folding or sliding partition—in some cases connecting doors—between the Bedrooms permits passengers to use the connecting Bedrooms as individual units, or they can be open to afford the convenience of one large room. On lines where this type of accommodation is operated, the advantages of the Bedroom Suite will especially appeal to travel groups.

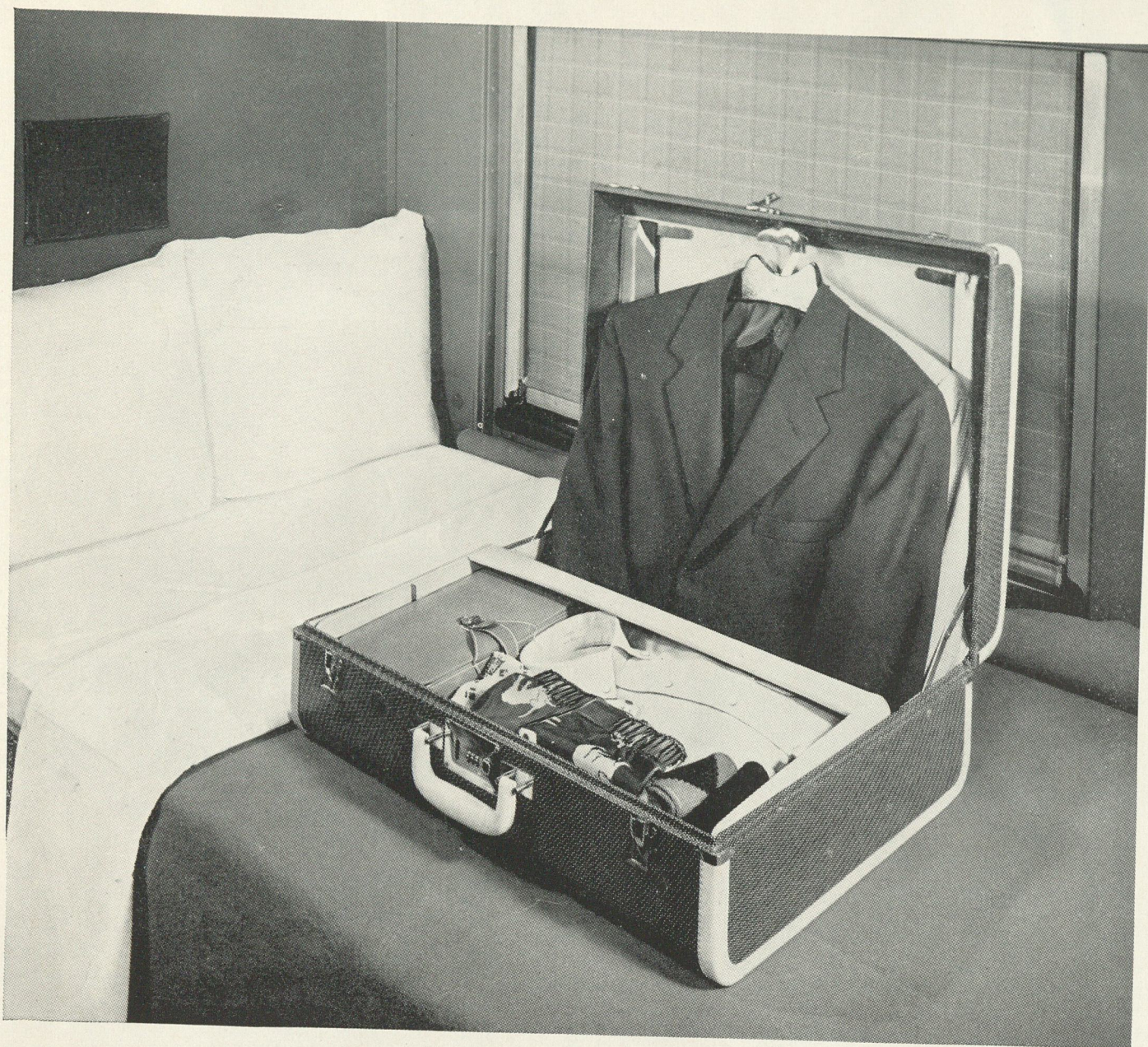
The Double Bedroom is a private room and contains a wide, comfortable sofa. For the night time, this sofa forms a sleep-



The Troop Sleeper has Ten Triple Decked Bunks at Night; the Aisle is at the Side



36 The case for going first class!

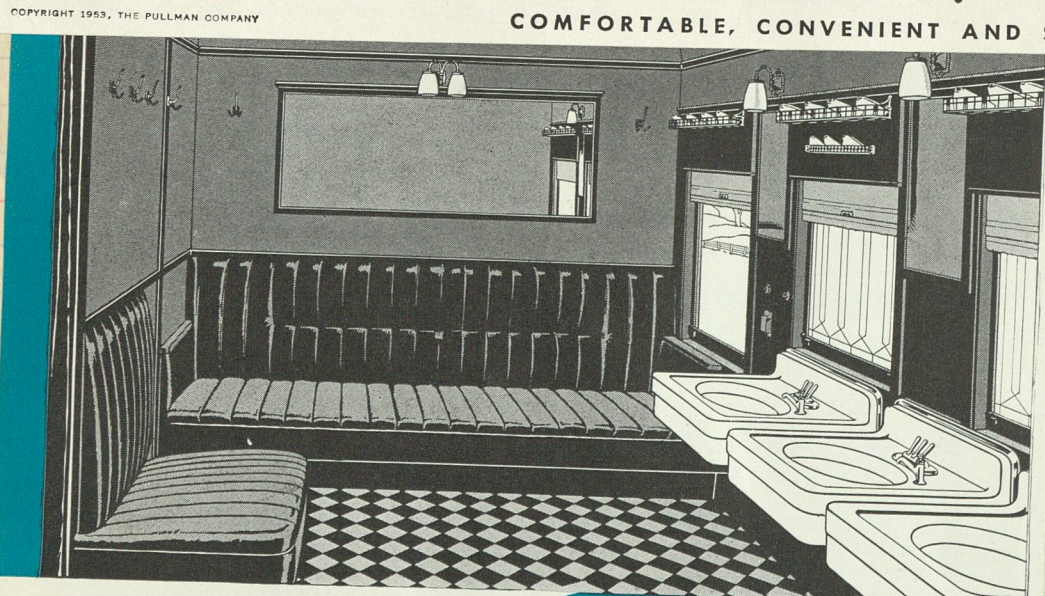


Where else can you travel in a private room—relax in your own Club—dine in a fine restaurant—and sleep in a full-size, comfortable bed? Weigh *all* the evidence and you'll find, too . . .

It's good business to

GO PULLMAN

COMFORTABLE, CONVENIENT AND SAFE

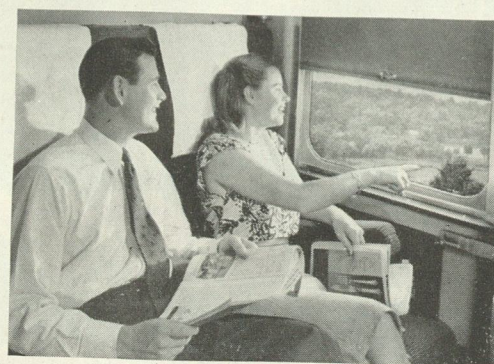
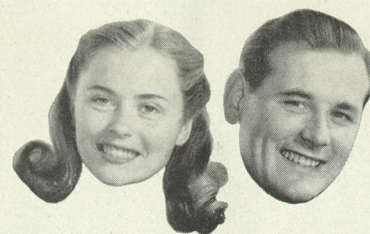


The Men's Dressing Room

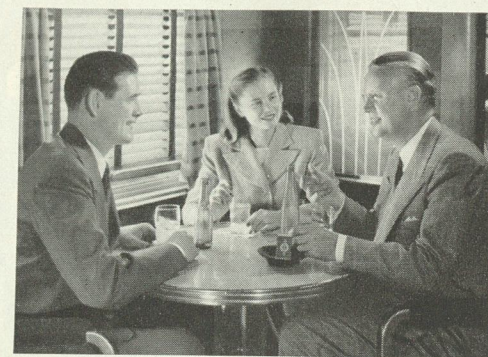
THIS ROOM has an area of 64 square feet, and is equipped to provide all the conveniences necessary to the masculine toilet. There are three wash bowls and one dental lavatory, with large mirrors so placed and lighted as to make shaving comfortable and easy. Automatic soap dispensers and other sanitary appliances, including a generous supply of towels, are provided. The upper portion of the sofa back can be raised to form a handy, roomy shelf. There are convenient slot containers for the disposal of old razor blades. A leather sofa and a smaller

settee provide a place for the toilet kits or suitcases which travelers employ. The toilet is in a private connected compartment. During the day the room provides a comfortable lounge for the smoker, a social gathering place, often described as the traveling men's forum. While men are not supposed to demand elaborate equipment or embellishment in quarters dedicated to their comfort and convenience, there is in the men's dressing room that extra margin of luxury which calls forth silent appreciation from every masculine traveler.

Aren't you glad!



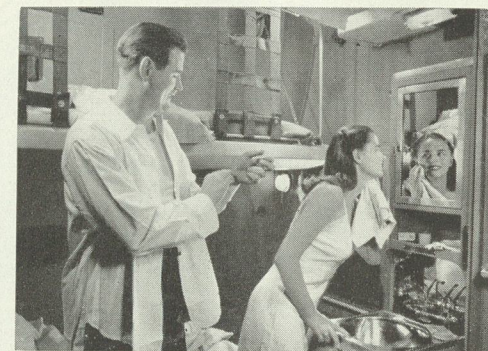
1. When you board the train and settle down, with all the comforts of home, in your own private Pullman room . . .



2. . . and you ease into the cheery lounge car for some friendly conversation or refreshment before dinner . . .



3. . . and you sink down and s-t-r-e-t-c-h out in that big soft bed for one of the sweetest night's sleep you've ever had . . .

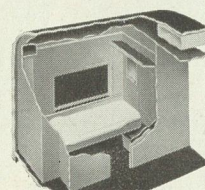


4. . . and you arrive safe and sound—on dependable railroad schedules—right in town convenient to everything . . . aren't you glad you decided to "go Pullman!"

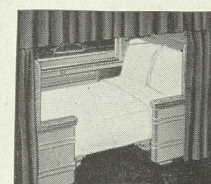
Go Pullman

THE SAFEST, MOST COMFORTABLE WAY OF GOING PLACES FAST!

Choice Accommodations in New Pullman Cars Soon Going into Service



New private rooms include Roomettes and Duplex-Roomettes for one, bedrooms and compartments for one or two, drawing rooms for three, connecting rooms for four. Each room has practically all comforts of home. (Accommodation shown is the Roomette.)



Improved section accommodations (upper and lower berths) combine comfort and economy as they've never been combined before. And that famous Pullman service is always yours to command; Pullman lounge car hospitality yours to enjoy.

© 1947, THE PULLMAN COMPANY

TYPICAL

OVERNIGHT PULLMAN RATES (1939)

ABOUT one-half of those who use Pullman cars during the course of a year travel between places where the lower berth rate is \$2.65 or less. A \$2.65 lower berth rate covers a typical overnight journey—about 300 miles. For longer trips, of course, the rates are correspondingly higher, but the ones quoted will give you an idea of the relatively low cost of Pullman service. The rates shown are Pullman charges only and do not include the cost of railroad transportation tickets. Your ticket agent or the Pullman Company will gladly quote rates on available accommodations for your next journey. Where Pullman "tourist" cars are operated, berth accommodations are available at rates approximately half of those charged between the same places in "standard" cars.

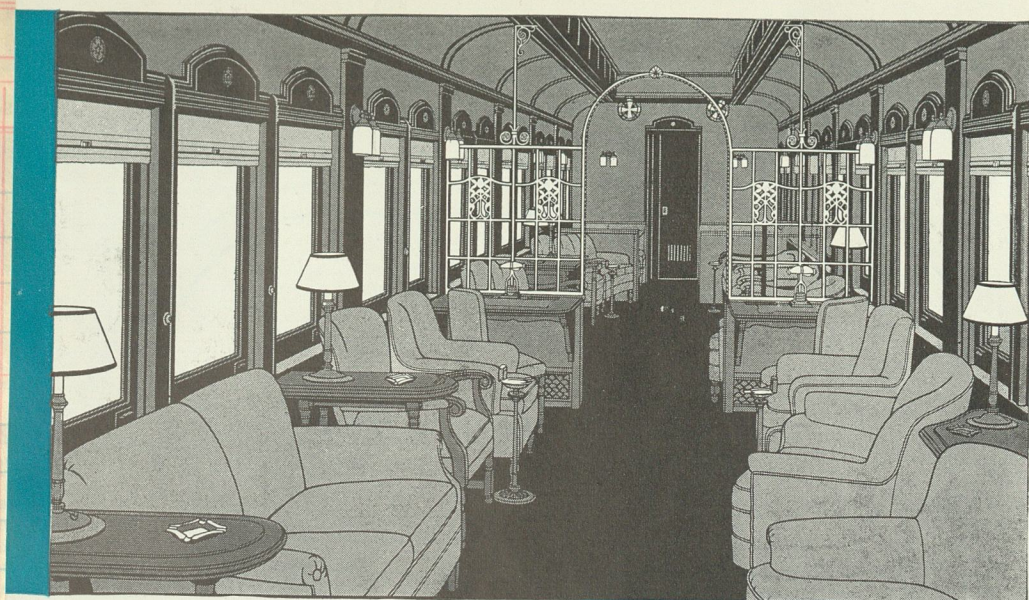
ON AN AVERAGE 300-MILE OVERNIGHT TRIP

Your Pullman accommodations would cost about:

Lower berth	\$2.65
Upper berth	2.00
Single Occupancy Section	3.55
Roomette for one	3.70
Duplex Room for one	4.20
Bedroom for one, \$4.75; for two	5.25
Compartment for one, \$5.25; for two or more	7.35
Drawing Room for one, \$6.60; for two or more	9.45
Master Room for one, \$7.90; for two or more	11.55



Clos. No. Sold Amount Clos. No. Sold



The Lounge Car

THE LOUNGE CAR. The Pullman lounge car is to a train what a hospitable living room is to a home. The excellent and discriminating taste of the decorative scheme and the comfortable furnishings create an inviting atmosphere of sociability in travel.

The lounge car gives you space to move about, and you will find the comfortable lounge chairs and sofas ideal for complete rest and relaxation. Deep soft carpeting adds a feeling of luxury, and the car is pleasingly lighted with table lamps and side-lights. Chairs and sofas

are those you would expect to find in good homes and clubs. At the desk you will find writing equipment for writing your cards and letters en route. There are tables with a generous supply of magazines, and there are smoking stands and accessories. And in most lounge cars buffet service is available in one part of the car. Comfort reaches an appreciable new level in this distinctive Pullman accommodation.

The Pullman Company invites any Pullman passenger to use the lounge car without any charge.

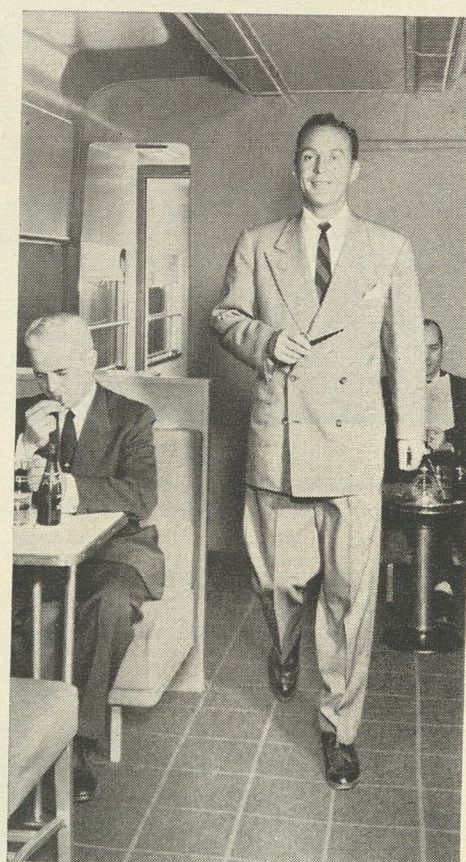
How to go relaxed all the way!



You relax all the way when you Go Pullman. You leave from the center of town, instead of the middle of nowhere.



You enjoy leisurely meals freshly cooked to order.



You have a wonderful world on wheels to roam in.



You sleep in a full-length bed, and arrive fresh and fit... right at the heart of things.

Take it easy

Go PULLMAN

Comfortable, Convenient and Safe

S

Make the best of every trip—take it easy!

57

When travel is your business, or pleasure, go Pullman. You relax in your private Pullman accommodation. You take in the exciting sights that sweep endlessly by your window. And you know you can easily take care of any business details *quickly and quietly*.



You sit down at the big restaurant-size table. You order your own favorite dishes from the large dining car menu. You dine *leisurely, pleasantly, comfortably*. When you finish, you relax with a stroll around your world on wheels, or a visit to the friendly surroundings of the lounge car.



You ride off to slumberland in your big, man-size Pullman bed. When you awake, you're there. Right in the center of everything—ready for business or pleasure. (P.S. Your family shares the same peace of mind you enjoy when you go Pullman. They know you're as safe in a Pullman as you are at home.)



IT'S GOOD BUSINESS TO GO PULLMAN

COMFORTABLE, CONVENIENT AND SAFE

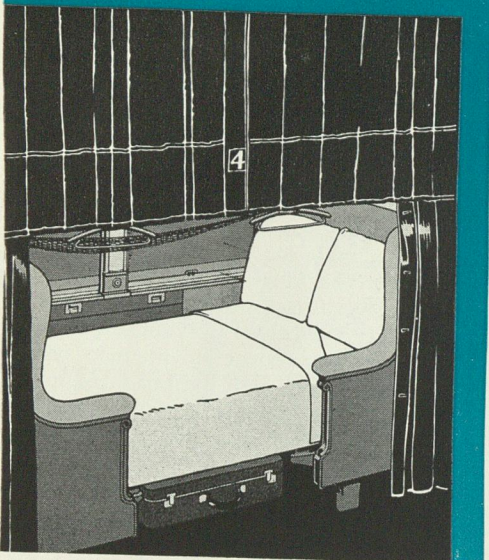
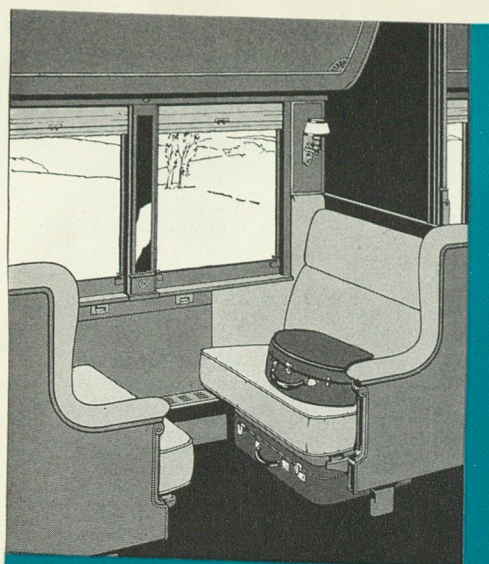


The Observation Car

THE OBSERVATION CAR. A Pullman observation car provides a charming, informal atmosphere for Pullman travelers, a place for pleasurable traveling hours, a place for play, for rest and deep relaxation. When we enter the observation car for the first time, we are delightfully impressed with its inviting atmosphere of luxurious spaciousness and comfort. With the extra-wide, clear windows in the main body of the car, and the sun-room (an open observation platform) at the rear of the car, the observation car reminds us of a bright, airy solarium.

The furnishings in the observation car are similar to those of a library of a well-appointed home: deep, soft carpeting; deep, comfortable lounge chairs and sofas; generous sized tables; softly-shaded, well placed table lamps and side lights; a desk equipped with writing accessories; magazines of various kinds; newspapers; smoking stands and accessories; and, in many cars, a radio.

The observation car is for your convenience and enjoyment... the Pullman Company invites any Pullman traveler to use this car without any charge.



The Lower Berth

A LOWER BERTH is furnished with electric lights, shelf for luggage, hammock for clothes, hangers for your clothes, and electric bell with which to summon porter at any hour. The spring mattress has 6½ pounds of the finest horsehair, is 4½ inches thick. Each of the two pillows contains the finest goose-feathers obtainable. The length of the bed between head boards is 6 feet, 2 inches, and its width 35 inches. Under the bed is baggage space for suitcases not to exceed 9 by 28½ inches.

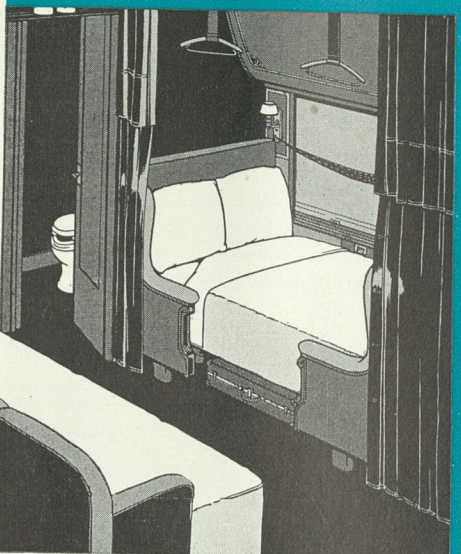
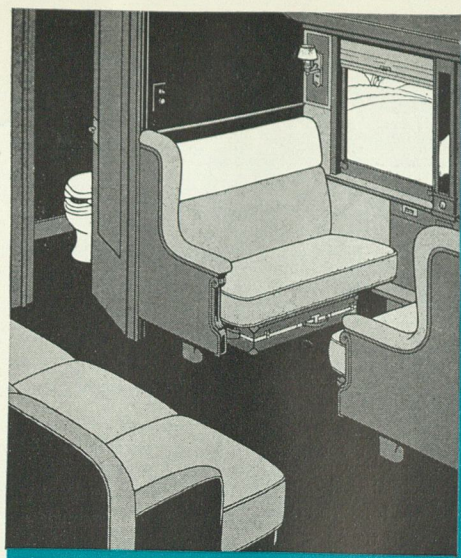
For daytime travel the passenger holding the lower berth is entitled to the seat facing forward; each seat contains ample room for two passengers. Porter will install sturdy table for writing or for games, if desired.

At night, the lower accommodates one or two adults. In the daytime two large windows provide ample opportunity to view the passing scenery. At night there are lights for reading after retiring. Heavy curtains can be securely fastened from the inside to afford complete privacy. It has been truly said of the lower berth, "No finer bed courts sleep anywhere."

Whatever the accommodations, Pullman attempts always to bring to every traveler the comforts and conveniences to which he is accustomed at home.

RAILROAD TRANSPORTATION REQUIRED: for an adult—1 rail ticket; for a child occupying lower berth alone—(5 years of age and under 12)—one-half fare rail ticket. The Pullman charge for a lower berth depends, of course, upon your destination, and is the basis for the charges of all other accommodations.

Syst



The Drawing Room

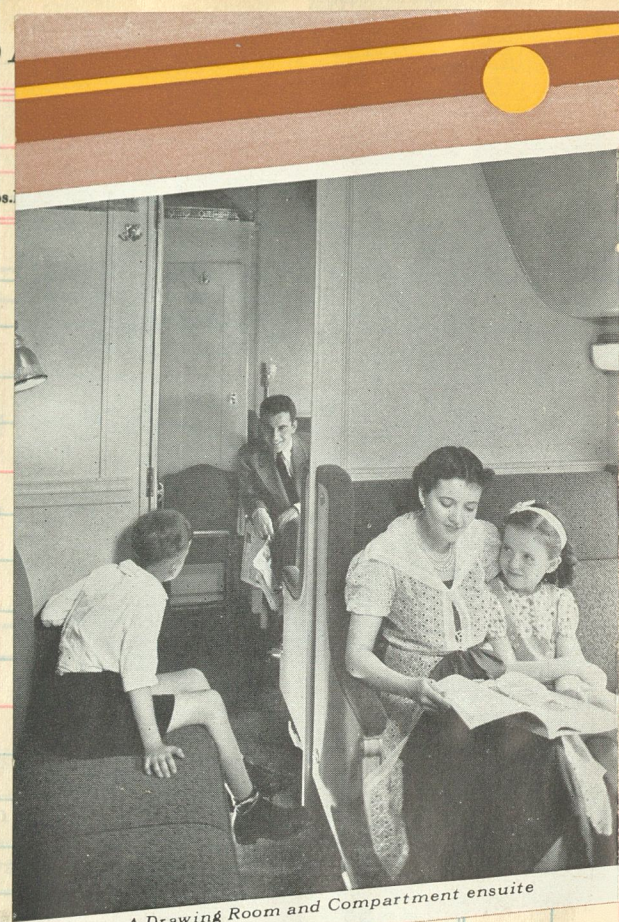
THE DRAWING ROOM in a Pullman car is the last word in travel luxury, providing complete seclusion. For family use it is particularly advantageous since it contains 58 square feet of floor area, including a separate room containing toilet and lavatory.

In addition to upper and lower berths there is a sofa 6 feet, 2 inches in length and 25 inches in width, useful for daytime rest and which may be transformed into a comfortable bed at night. Excellent spring-base mattresses each contain 6½ pounds of resilient horsehair. The drawing room is equipped with six pillows, two for each berth and the sofa. Each contains 2½ pounds of downy goose-feathers.

For meals, or for writing or games, the porter will install a sturdy table. A drawing room is furnished with electric lights and fan, separate heat control, space for luggage, hangers for clothes, and an electric bell with which to summon the porter at any hour.

For daytime travel there is ample room to seat four or more passengers comfortably. At night the commodious upper and lower berths accommodate one or two adults and the sofa one adult. As in the compartment there are large mirrors as an aid in dressing, and where air-conditioning applies the occupants have individual control, assuring the desired temperature at all times.

RAILROAD TRANSPORTATION REQUIRED: for an adult—in certain parts of the United States 1½ rail tickets, in other sections two rail tickets; in Canada one rail ticket. For two or more adults, one rail ticket each. Pullman charge: In the United States, for an adult or an adult and child under 5 years of age, approximately 2½ lower berth fares; for two or more adults, approximately 3½ lower berth fares. In Canada: for one passenger, approximately three lower berth fares; for two or more passengers, approximately 3½ lower berth fares.



A Drawing Room and Compartment ensuite

THIS CAR
FOR
PULLMAN PASSENGERS
ONLY

Who's Right? Who's Wrong?



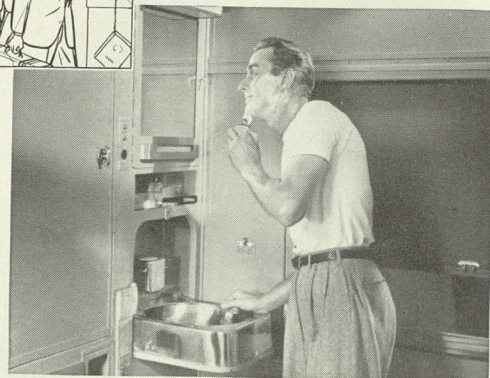
"Goodness! Fresh sheets again tonight!"



Aunt Jenny's right! The porter makes your bed with crisp, clean sheets each night. And improved section (upper and lower) accommodations of new Pullman cars now in service are more comfortable than ever!



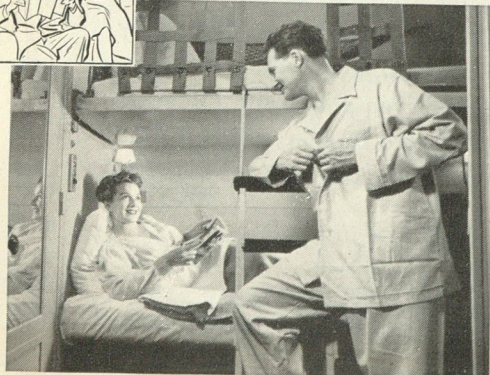
"I'm at the station; see you in ten minutes!"



The salesman's right! Having shaved and dressed in his Pullman room and breakfasted on the train, he got in on dependable railroad schedules; got off right in town, rested, refreshed and rarin' to go!



"But we can't afford a Pullman private room!"



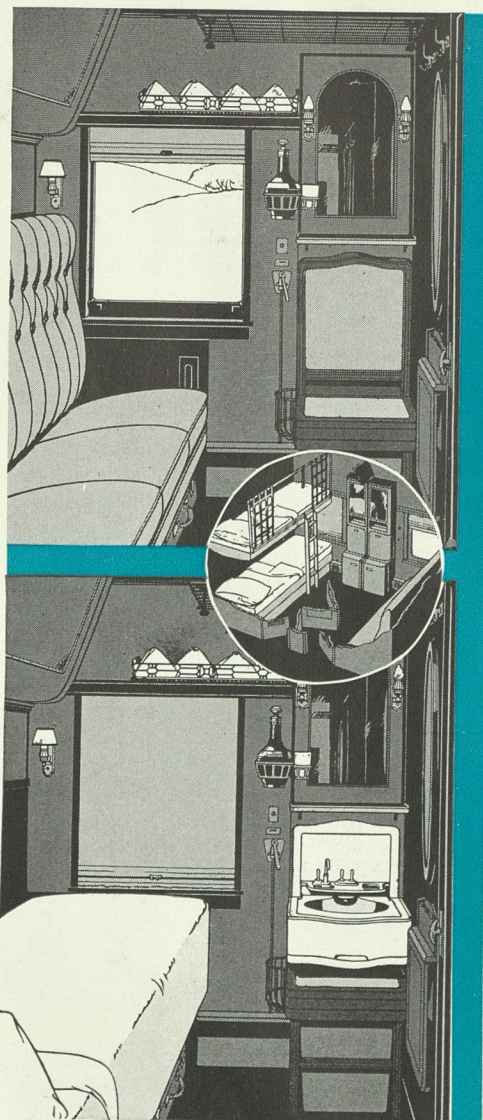
The wife is wrong! When two people occupy a bedroom, it actually costs less than two lower berths. Among its many comforts and conveniences are complete privacy, and your own wash-bowl and toilet.



"This looks like something new!"



The passenger's right! The Duplex-Roomette is a new-style room in a new-style car now in service on some railroads, coming soon on others. Like the popular Pullman roomette, it's designed for single occupancy.



The Bed Room

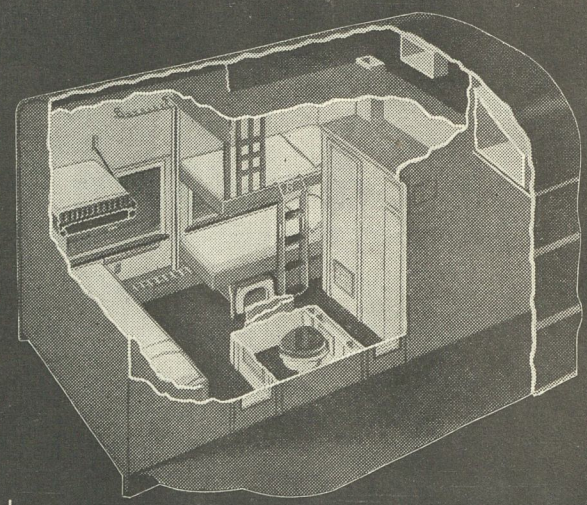
THE DOUBLE BED ROOM is an enclosed private room, and contains a wide, comfortable sofa. For night-time use, this sofa forms a sleep-inviting bed. Above the sofa is an upper berth which similarly makes down into a bed. The bedroom has a private toilet; also a folding wash basin. A hinged desk provides a writing table as well as a service table for meals. The room is provided with electric lights, separate heat control, an adjustable ventilator in the door, and exhaust fans—all of which allow the occupant to regulate room temperature to suit his desire. Each room is completely air-conditioned. The bed is 6 feet 5 inches long. (In the Single Bedroom there is no berth above the sofa seat.)

A vacuum water bottle for ice water is included as well as clothes hooks and a full length mirror. There is ample room for luggage space beneath the sofa and in a luggage rack. For passengers seeking combined advantages of privacy, comfort and convenience the Double Bedroom is an ideal accommodation. Some of the bedrooms are separated by a folding partition that permits the rooms to be kept as individual units, or can be opened to afford the convenience of one large room where a table can be set and a meal enjoyed in complete comfort and privacy. Family groups find this a very convenient and comfortable way to travel.

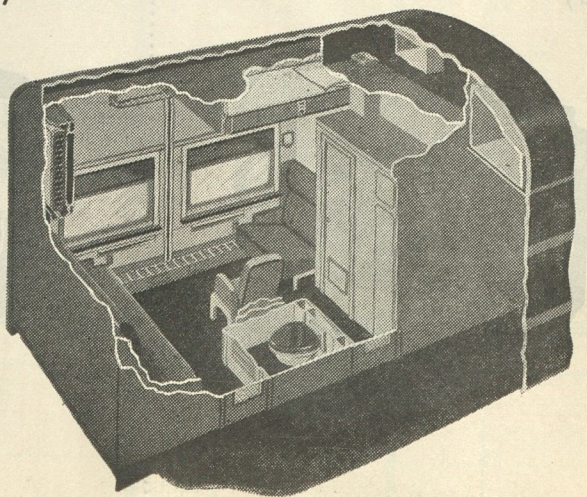
RAILROAD TRANSPORTATION REQUIRED: for an adult—1 rail ticket. Pullman charge: for one adult or one adult and child under 5 years of age, approximately 1½ lower berth fares; for two adults, approximately twice the lower berth fare. In Canada: for one passenger two lower berth fares; for two passengers approximately 2½ lower berth fares. BEDROOM SUITE: Two bedrooms en suite. Railroad transportation: for two or more passengers, one rail ticket each. Pullman charge: the price of two bedrooms not to exceed cost of drawing room.

Bedroom Suite

FOR 2, 3 OR 4 PERSONS... Adjoining transverse and longitudinal bedrooms may be purchased en suite and converted into one large room by folding back the dividing partition. These connecting bedrooms appeal particularly to parents with children. They are also favored by groups of business men who wish to fold back the partition to make one large conference room so that they may "work on the way." Extra tables are easily available from the porter. A connecting door in the sliding partition enables the occupants to have company or privacy according to their preference.



night

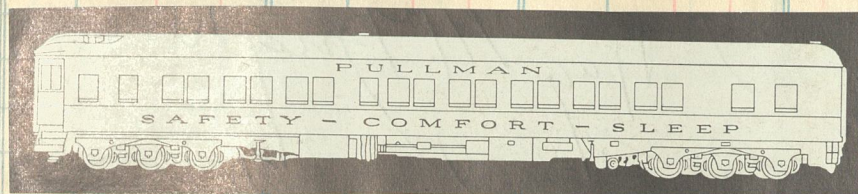


day

Go Pullman THE SAFEST, MOST COMFORTABLE WAY OF GOING PLACES FAST!

Clos. No. Sold

GRACIOUS hospitality is the pattern of Pullman service. The ideal of hospitality is the art of making one's guests feel "at home," by doing everything possible to make them comfortable and happy. It is this art that constitutes an ingrained part of Pullman service. As you travel in a Pullman car, you will have the conveniences and comforts experienced in daily living to which you are accustomed at home, at your command. There are no mysteries surrounding the acceptance of Pullman service as a medium of travel in services available to all who seek or know the better way to go.



THE PULLMAN COMPANY

SHOWER BATH

[FIFTY CENTS]

RING BELL FOR ATTENDANT OR PORTER

For your comfort

OBSERVATION CAR

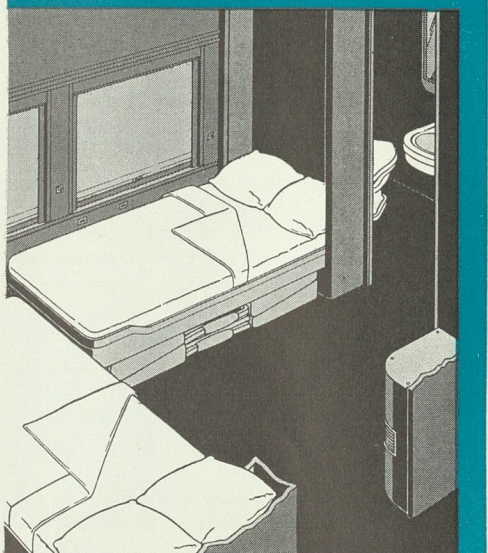
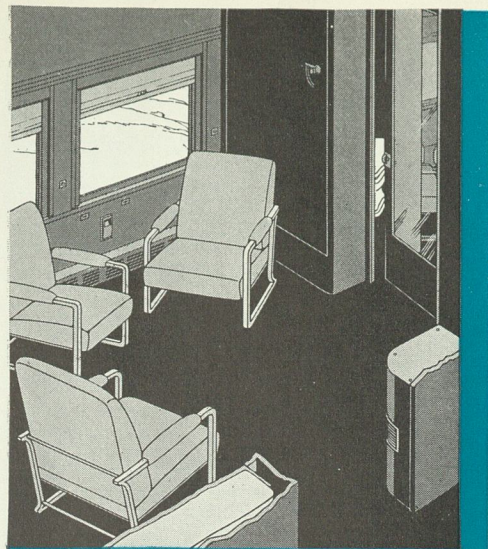
OUTDOOR platform, parlor for men and women, periodicals, newspapers, women's lounge and bath, maid in attendance

CLUB CAR FORWARD

BARBER, valet service, bath, lounge for smoking, periodicals, newspapers, market reports

Refreshing drinks, cigars and cigarettes always available. Toilet articles may be purchased from barber.

No Cigarettes will be sold from this Car while in Iowa, Utah or Nevada



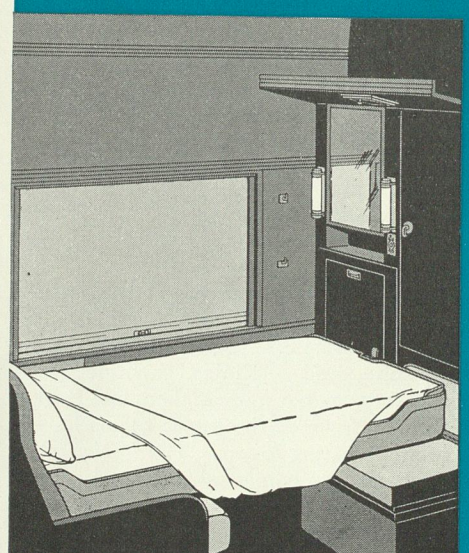
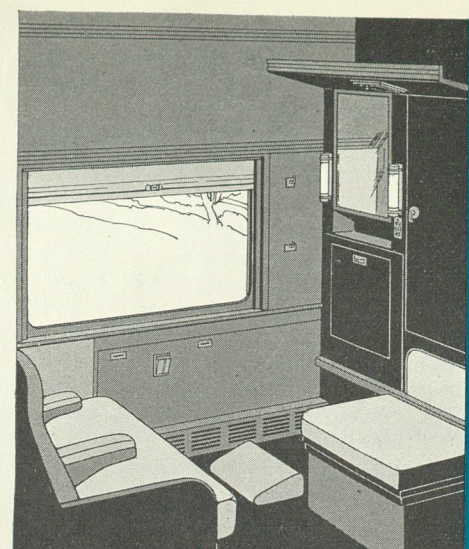
The Master Room

THE MASTER ROOM represents the ultimate in spacious accommodations. The room has two folding beds that can be returned to their place in the wall during the daytime, thus affording the occupants complete use of the entire floor space of the room. One of the beds is similarly placed to that in the New Drawing Room, occupying the space next to the windows. The other bed takes the place of the couch and folds up against the aisle wall permitting the installation of a folding partition between the Master Room and an adjoining Double Bedroom. These accommodations can be had en suite and the two rooms can be made into one large room for conferences, etc. The Master Room is provided with four roomy, comfortable folding chairs for daytime use which are placed beneath the folding beds at night.

The bathroom, which is separate but adjoining and connects with the Master Room, contains toilet facilities, wash basin, mirrored cabinet for toilet accessories and a roomy shower bath with passenger-control of the water temperature.

The room has an electric fan, individual control of lighting and ventilation and thermostatic control of the heating facilities. There is a shoebox opening on the aisle. Each room is air conditioned. The Master Room is available only on certain Eastern lines.

RAILROAD TRANSPORTATION REQUIRED: In the United States for an adult $1\frac{1}{2}$ rail fares. For two or more adults, 1 rail fare each. The Pullman charge in the United States: for one person is 3 times the lower berth fare; for two or more persons approximately $4\frac{1}{5}$ lower berth fares.



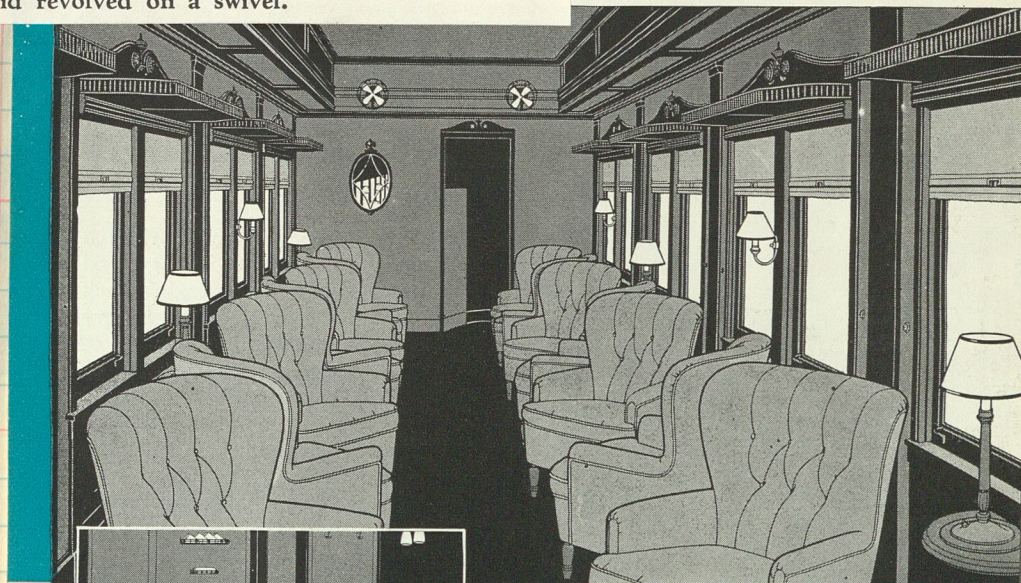
The Roomette

THE "ROOMETTE" is a small completely enclosed private room containing one bed, affording ideal accommodation for one person. In daytime the bed folds into the wall at one end of the room, and the passenger has a sofa seat of comfortable contour, with ample space for undressing before the bed is lowered. For dressing the passenger can make the whole room space and its complete toilet facilities available by returning the bed to its niche in the wall. The bed is easily raised or lowered. When the bed is made down for the night it is fastened at the foot by a lock. This is readily released when the passenger desires to raise the bed, and the lock then reverses and holds the bedding in place. The size of the bed, 6 feet 5 inches in length, will appeal to persons over average height.

The door of the "Roomette" can be locked at night, or left open and a zipper curtain drawn across the opening. The "Roomette" provides individual regulation of ventilation, heat and light; complete toilet facilities, with washstand folding into one wall, and above it a mirrored cabinet for toilet articles, with tubular lights on each side; a locker in which to hang clothes; a large rack for luggage; a vacuum water bottle in cabinet, and box from which the porter can remove shoes without disturbing the sleeper. This accommodation is available on certain Eastern and Western lines.

RAILROAD TRANSPORTATION REQUIRED: for an adult—1 rail ticket. The Pullman charge for a Roomette: for one adult or one adult and child under 5 years of age, approximately $1\frac{2}{5}$ lower berth fares.

The first parlor car in the United States was the "Maritana," built by George M. Pullman and placed in operation in 1875. The chairs were "richly upholstered," fitted with adjustable backs, and revolved on a swivel.

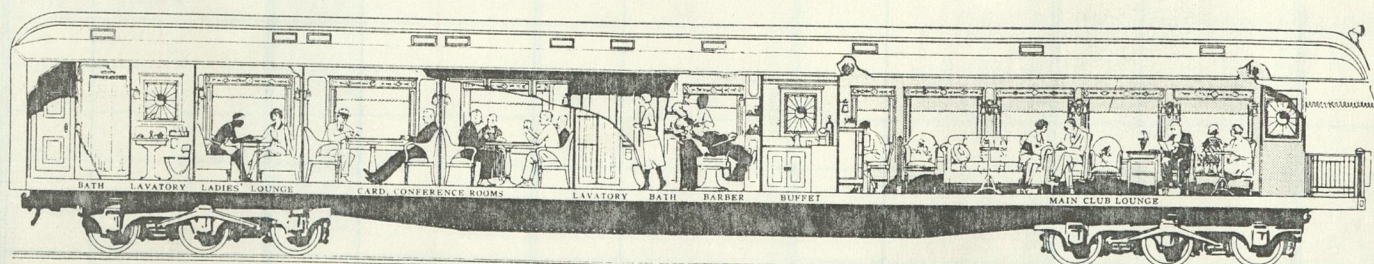


The Parlor Car

THE PARLOR CAR. For those travelers whose journey occupies chiefly the daylight hours Pullman provides the parlor car. It is a long, airy, spacious, well-lighted car with individual upholstered chairs from which the occupant may face the view of the passing countryside through wide, clear windows, or turn his chair inward for reading and restful relaxation. Porter will install sturdy table for writing or games, if desired. Provision is made for proper ventilation and air circulation. Ample facilities are provided for light luggage and wraps.

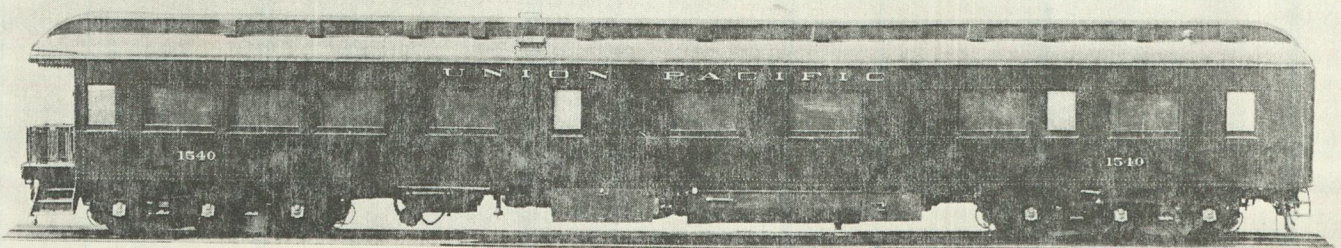
THE PARLOR CAR DRAWING ROOM. For the greater privacy of groups traveling on daylight runs there is the parlor car drawing room, accommodating up to five persons. There is a generously proportioned sofa for three, and two overstuffed chairs. The room contains a lavatory and accessories, mirror and coat hangers. It is illuminated by wall-brackets conveniently spaced. The porter will install a large, sturdy table for meals, writing or games, if desired. The parlor car drawing room is the rendezvous of business men traveling to conferences.

RAILROAD TRANSPORTATION REQUIRED: PARLOR CAR SEAT: for an adult—1 rail ticket; for a child (5 and under 12 years) half fare. Pullman rate is approximately one-half cent a mile, minimum charge 55c. PARLOR CAR DRAWING ROOM: In United States, two rail fares minimum. Pullman charge—three seat fares, with one additional seat fare per passenger in excess of three.



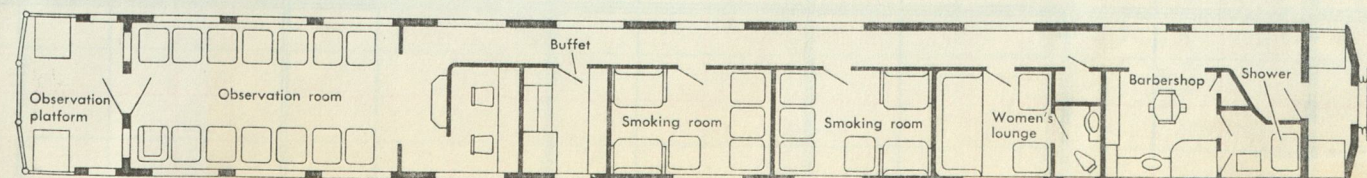
EVERY conceivable convenience could be found between vestibule and observation platform of lounge car in North Coast Limited of 1926: bath, maid, card room, barber, buffet, lounge, even a roomy observation platform fitted with campchairs, searchlight.

NP.



OBSERVATION-LOUNGE 1540, constructed by Pullman in 1925 for Overland Route service, afforded UP patrons a lounge, buffet,

private smoking apartments, a women's lounge, a barbershop, and bath. Hardier travelers held down chairs on the open platform.



December 31, 1968: "The World's Greatest Hotel" closes its doors

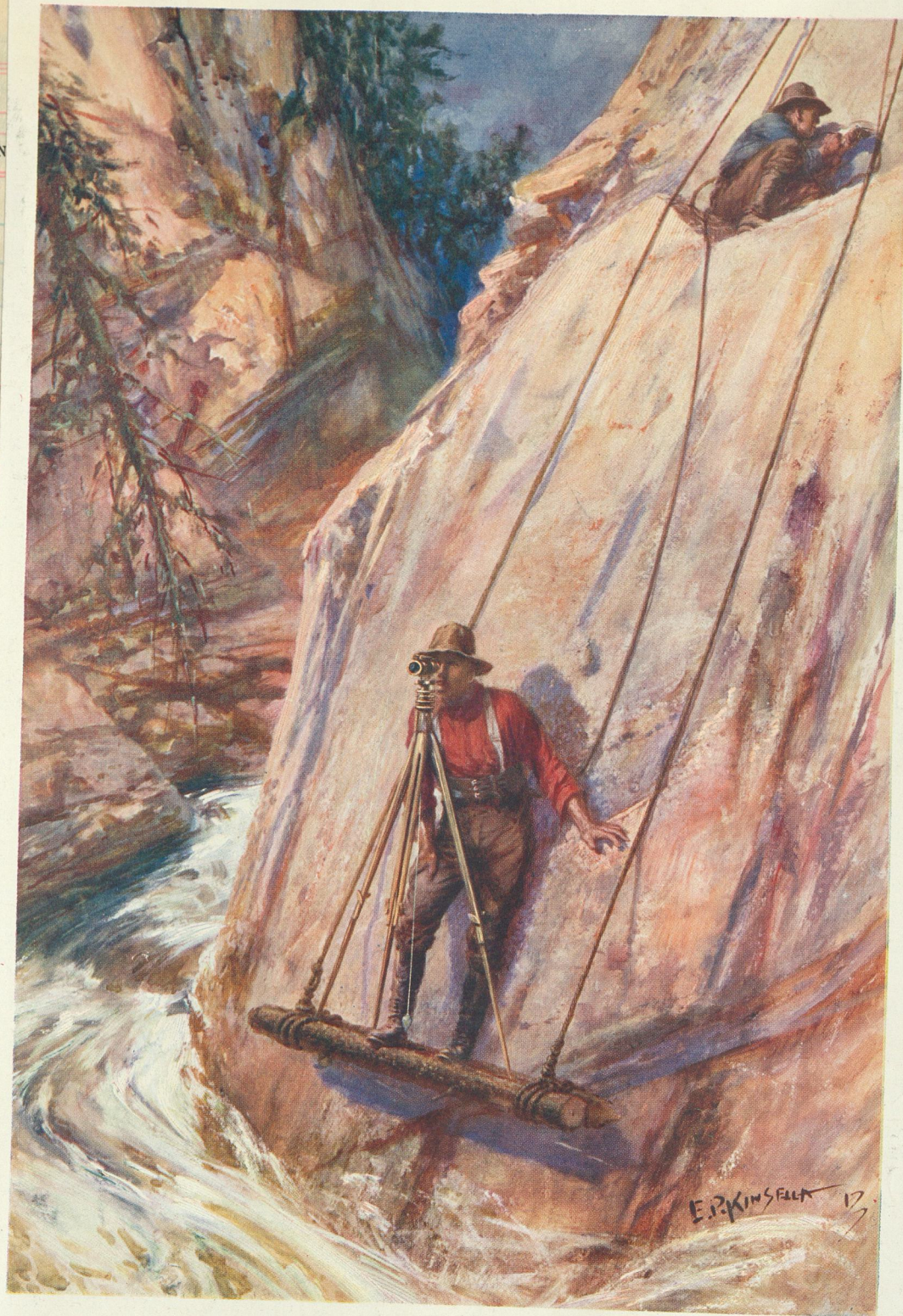


SPERRY 144's headlight filters snow at Westwood, Calif., on WP's 4th Subdivision at 7 a.m., January 20, 1982, as the rail-inspection vehicle slogs through a couple feet of the white stuff en route to Bieber. In 1981, Automation Industries' 26 Sperry detector cars inspected 189,320 miles of track, spotting more than 90,000 rail defects—3600 per car.

Chris W. Skow.

FOUR TIMES a year, a Sperry Rail Service car spends 3 or 4 weeks on the Western Pacific, inspecting approximately 2500 track-miles, and Conductor Chris W. Skow takes leave of his regular Oroville-Portola, Calif., freight run for the assignment. He snapped Sperry 144 with a rainbow over its shoulder . . . eastbound at Phillips, Calif., January 18, 1982.

Chris W. Skow.



THE RAILWAY PATHFINDERS.

In searching for a route through rugged mountainous country the man with the transit and level often has to be slung on a crazy log platform over a raging torrent.

Miles of New Line Completed in the United States Since 1830

Year	Miles	Year	Miles
1830	40	1885	3,131
1831	99	1886	8,400
1832	191	1887	13,081
1833	116	1888	7,066
1834	214	1889	5,707
1835	138	1890	5,739
1836	280	1891	4,620
1837	348	1892	4,648
1838	453	1893	3,024
1839	386	1894	1,760
1840	491	1895	1,420
1841	606	1896	1,692
1842	505	1897	2,109
1843	288	1898	3,265
1844	180	1899	4,569
1845	277	1900	4,894
1846	333	1901	5,368
1847	263	1902	6,026
1848	1,056	1903	5,652
1849	1,048	1904	4,388
1850	1,261	1905	5,623
1851	1,274	1906	5,212
1852	2,288	1907	3,214
1853	2,170	1908	3,748
1854	3,442	1909	4,122
1855	2,453	1910	3,066
1856	1,471	1911	2,997
1857	2,077	1912	3,071
1858	1,966	1913	1,532
1859	1,707	1914	933
1860	1,500	1915	1,098
1861	1,016	1916	979
1862	720	1917	721
1863	574	1918	686
1864	947	1919	314
1865	819	1920	475
1866	1,404	1921	324
1867	2,541	1922	427
1868	2,468	1923	579
1869	4,103	1924	644
1870	5,658	1925	1,005
1871	6,660	1926	779
1872	7,439	1927	1,025
1873	5,217	1928	666
1874	2,584	1929	513
1875	1,606	1930	163
1876	2,575	1931	24
1877	2,280	1932	76
1878	2,428	1933	45
1879	5,006	1934	93
1880	6,876	1935	148
1881	9,789	1936	38
1882	11,599	1937	
1883	6,819	1938	
1884	3,974		

Total 267,719

Miles of New Lines Completed in Canada Since 1904

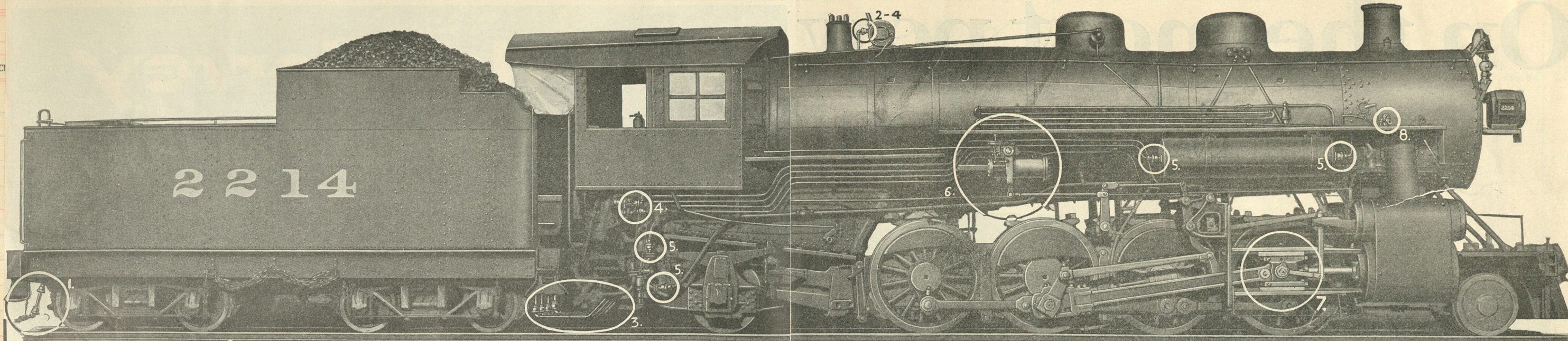
Year	Miles	Year	Miles
1904	316	1923	655
1905	1,181	1924	615
1906	1,007	1925	414
1907	976	1926	335
1908	1,249	1927	310
1909	1,488	1928	723
1910	1,844	1929	841
1911	1,898	1930	285
1912	2,232	1931	750
1913	3,013	1932	121
1914	1,978	1933	1
1915	718	1934	0
1916	290	1935	1
1917	207	1936	2
1918	135	1937	1
1919	433	1938	0
1920	305	1939	101
1921	252	1940	1
1922	145	1941	2
		1942	1

L. H. Oneonta, N. Y.—Following are the 15 longest railroads in the U. S., listed according to main line mileage:

Railroad	Mileage
Santa Fe System	13,551
Southern Pacific System	13,196
(Including the Mexican line, 14,366)	
New York Central System	11,202
Milwaukee Road	11,115
Pennsylvania	10,308
Union Pacific System	9,916
Missouri Pacific System	9,575
(Including GC and IGN)	
Chicago, Burlington & Quincy	8,976
Chicago & Northwestern	8,403
(Including CST&M&O, 10,051)	
Rock Island System	8,151
Great Northern	8,093
Southern Ry. System	7,994
(Including CNO&TP, AGS, NA, GS&F, and NO&NE)	
Northern Pacific	6,727
Illinois Central System	6,581
Baltimore & Ohio	6,471



"Don't Worry, Hogger! It's Only Another of Those Fan Inspection Trips"



BARCO SPECIALTIES

Lower Maintenance Costs Increase Operating Efficiency

THE cost of maintaining locomotive piping; air, steam and water connections; crossheads and power reverse gears can be cut to a small fraction of the usual figure—if you apply Barco Equipment.

Note the Barco Specialties shown here. Each of these devices has been developed with the definite purpose of effecting marked economies either by eliminating the need for repairs and renewals entirely, or else by so simplifying the design that such repairs can be performed with large savings in time, labor and expense.

Their economy has been clearly demonstrated on many of the leading roads where data available shows that the first cost of Barco Equipment is quickly repaid by the savings effected.

Add your road to the long list of satisfied users by specifying Barco Locomotive Specialties.

TODAY a tremendous volume of traffic is throwing a heavy burden on your motive power. More miles and more tonnage per locomotive is the only solution with present equipment.

Barco Specialties applied at each of the points indicated on the above locomotive will prove a vital factor in attaining this result. They prevent many costly engine failures and reduce to a minimum the time power is held out of service for repairs. This decisively increases locomotive mileage, while the Barco Power Reverse Gear, by providing an absolutely reliable means for controlling the cut off, enables you to appreciably increase locomotive tonnage ratings.

Meet the demand for increased operating efficiency by applying Barco Specialties NOW, as your locomotives go through the shop.

BARCO MANUFACTURING COMPANY

CHICAGO

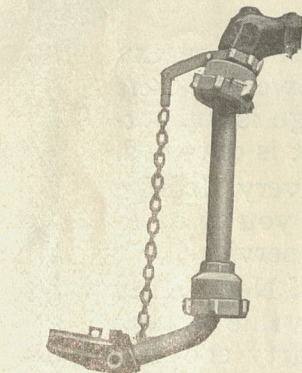
ILLINOIS

THE HOLDEN

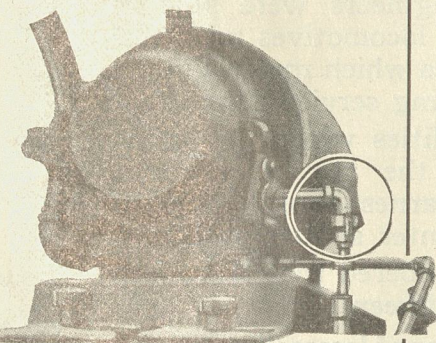
COMPANY, Ltd.

IN CANADA
MONTREAL—TORONTO

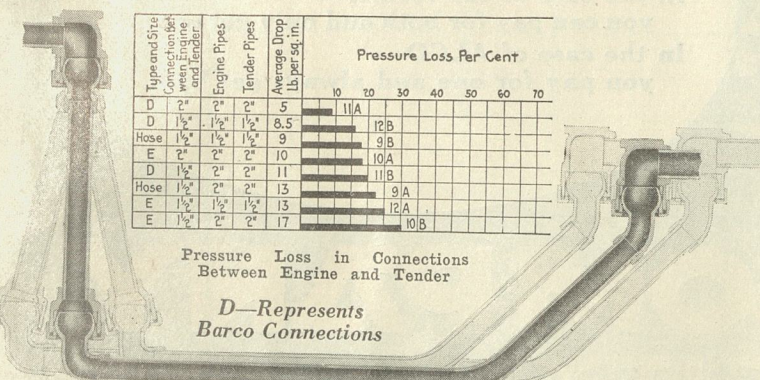
IN CANADA
WINNIPEG—VANCOUVER



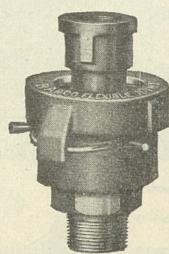
1—Barco Steam Heat Connections



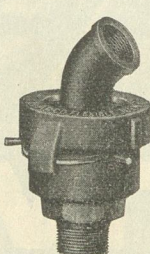
2—Barco Generator Connections



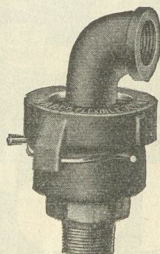
3—Barco 3 V Engine Tender Connections



7C-8

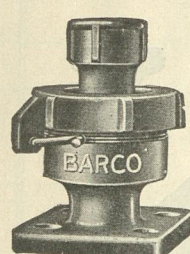


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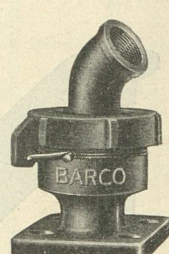


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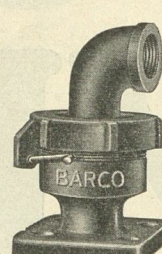
4—Barco Joints for Piping at Distributing Valves, Headlight Generators, etc.



7H-8

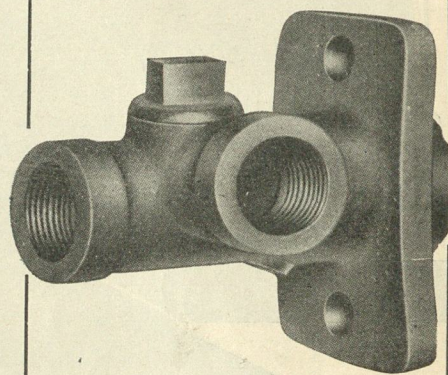


7H-8A

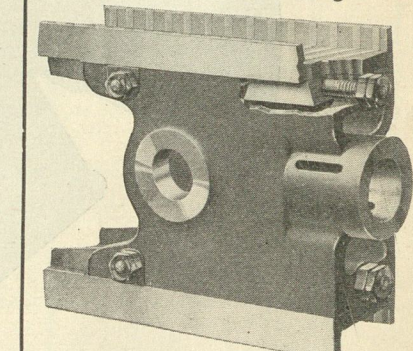


7H-8B

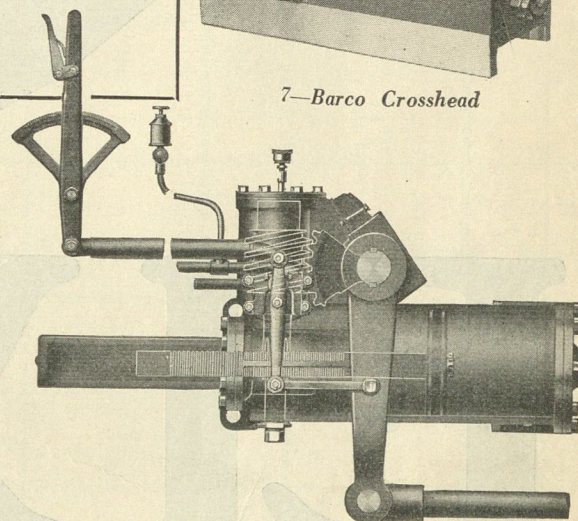
5—Barco Joints for Piping at Air Reservoir, Injectors, etc.



8—Barco Blower Fitting



7—Barco Crosshead



6—Barco Power Reverse Gear

AMERICAN EXPRESS COMPANY.

PLEASANTVILLE, N. Y. (479-1902.)

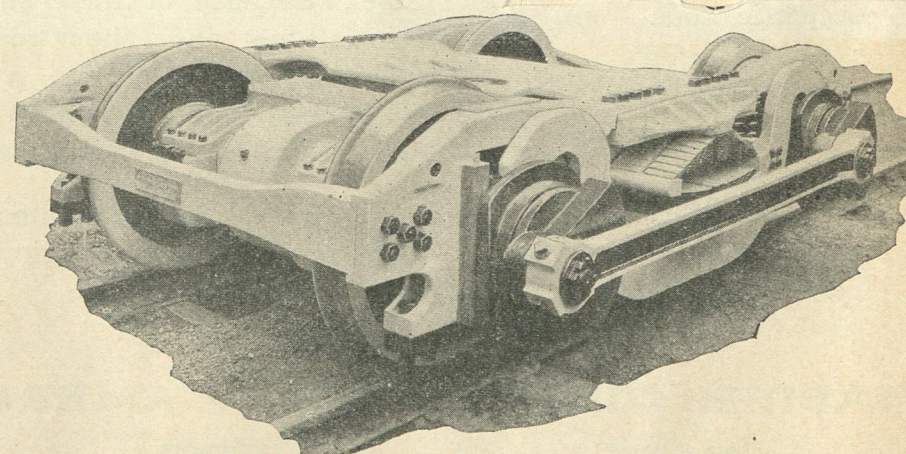
Received, IN TRUST, for the American Express Company, *one money order*

book, containing *Twenty order blanks* signed { Money Orders
Foreign Checks
Foreign Remittance Blanks
Travelers Cheques } numbered

6-2238420 to 6-2238440 for which I (or we) accept the responsibility of due issue and undertake to account therefor, and further agree to keep the proceeds of sales of same entirely separate and distinct from other funds in my (or our) hands.

J. Allen Brooks

NOTE:—If delivery cannot be made to the Branch Agent personally, this receipt must be signed for him by his authorized representative, thus: "JOHN THOMPSON per W. C. SMITH."



Front view of the Bethlehem Auxiliary Locomotive

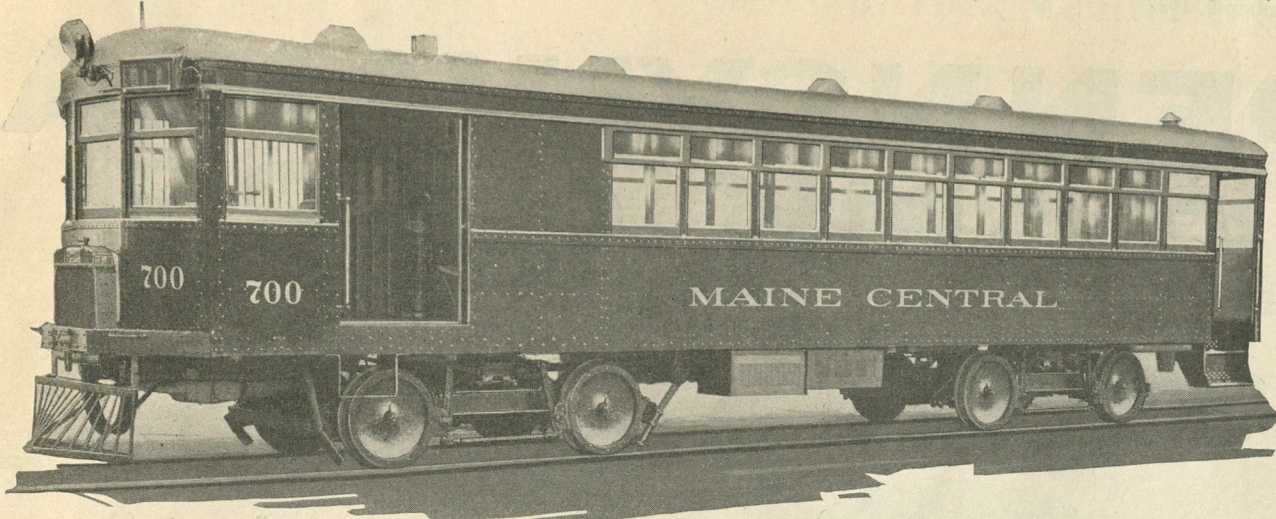
BETHLEHEM STEEL COMPANY—General Offices: BETHLEHEM, PA.

SALES OFFICES:

New York Boston Philadelphia Washington Atlanta Pittsburgh
Buffalo Cleveland Detroit Chicago St. Louis San Francisco

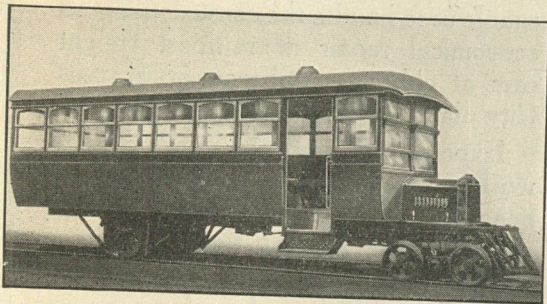
Bethlehem Steel Export Corporation, 25 Broadway, New York City, Sole Exporter of Our Commercial Products

BETHLEHEM

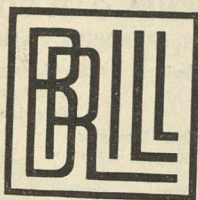


Combination Passenger and Baggage Gas Rail Car Measures 42 ft. 6 in. over bumpers, seats 46 passengers, and has a maximum speed of 47 m. p. h. Automotive Equipment furnished by the Service Motor Truck Company.

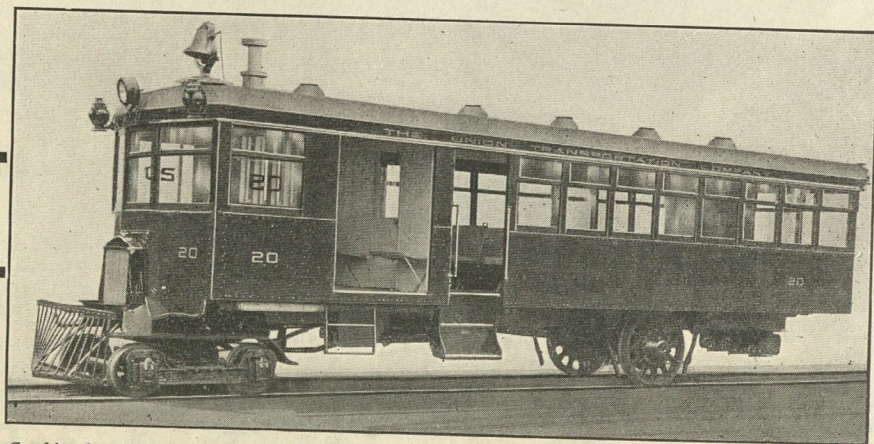
BRILL GAS RAIL CARS



Thirty-One Passenger Gas Rail Car, mounted on Brill No. 80-A1 Pony Truck. Length over pilot, 27 ft. 10 in.; maximum speed, 30 m. p. h. Automotive Equipment furnished by the Service Motor Truck Company.

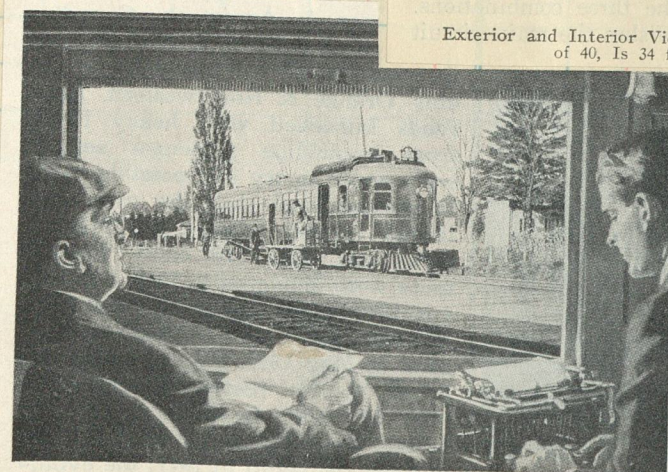
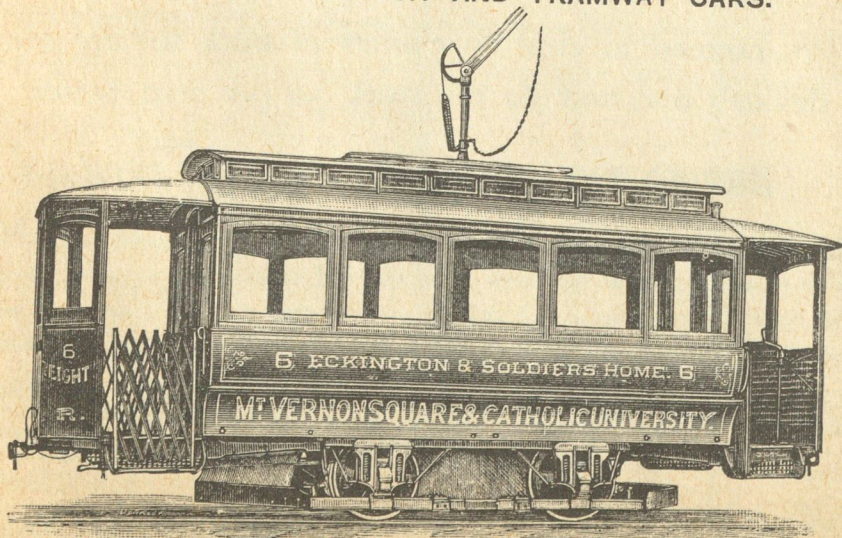


THE J. G. BRILL COMPANY
PHILADELPHIA



Combination Passenger and Baggage Gas Rail Car on Brill No. 80-A2 Pony Truck. Length over all, 33 ft. 4 in.; seating capacity 43; maximum speed, 33 m. p. h. Automotive Equipment furnished by The White Company.

J. G. BRILL COMPANY,
PHILADELPHIA, PENNA.
BUILDERS OF RAILWAY AND TRAMWAY CARS.



The Pride of the Road

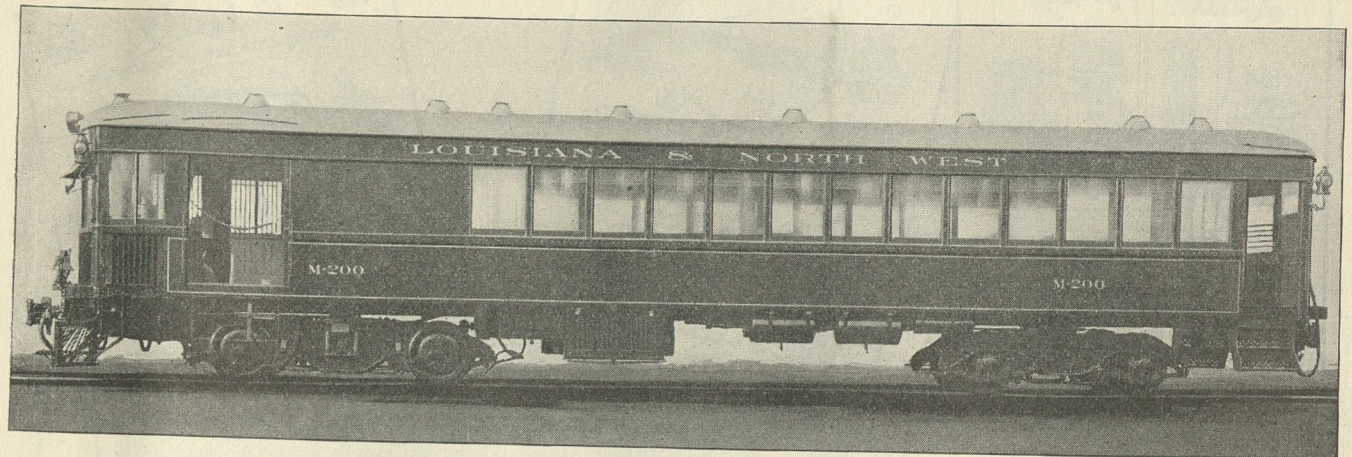
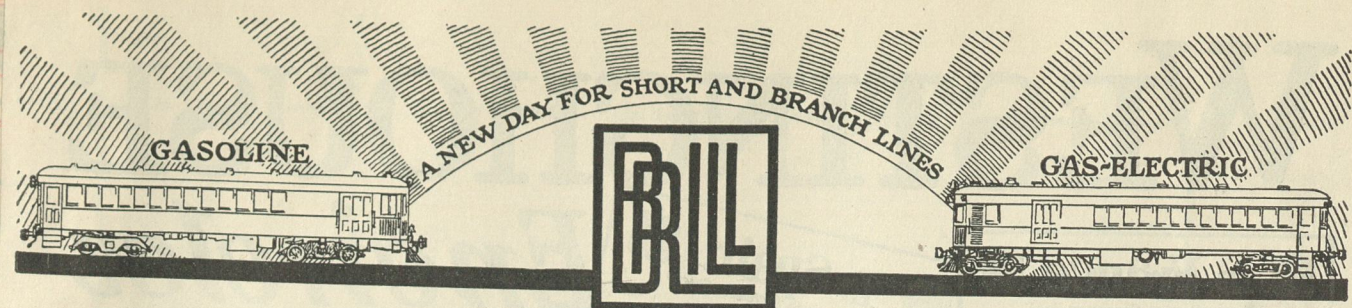
The manager is satisfied with the receipts as well as the expenditures on the branch line operated by

Gas-Electric Motor Cars

The stimulation of traffic and material reduction of operating costs following the introduction of these cars are facts demonstrated by over fifty cars of G-E manufacture in daily service throughout the United States.

General Electric Company

Sold



Brill Model 75 "Record" Car

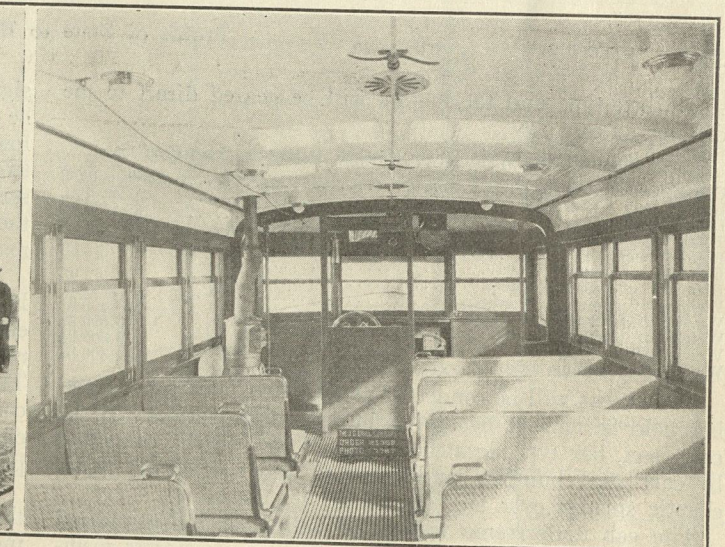
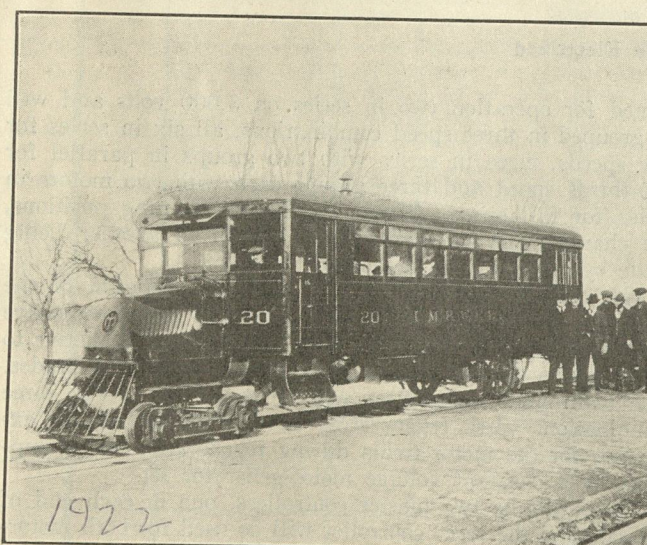
Down on the Louisiana & Northwest R. R. between Gibsland, La. and McNeil, Ark., the Brill Model 75 Gasoline Car, which made the "record" run between Philadelphia and St. Louis, continues to give satisfaction. From report just received from the operating company, "the motor is running just as smoothly today as it did when the car was first received."

AUTOMOTIVE CAR DIVISION

The J. G. Brill Company
Philadelphia, U. S. A.

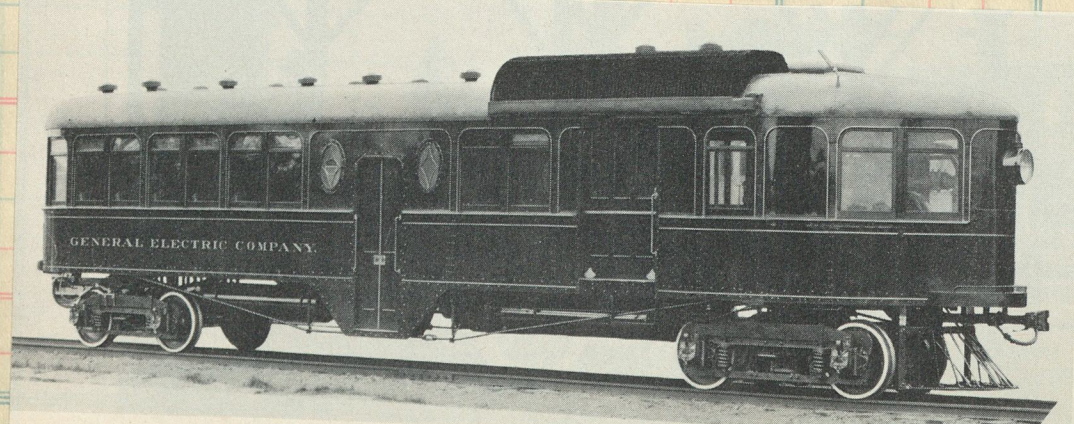
What it did —

Left Philadelphia, 9:00 A. M., Saturday, February 7, 1925, under its own power on Baltimore & Ohio R. R., going by way of Baltimore and Cumberland, Md., Chillicothe and Cincinnati, Ohio, arriving in St. Louis, Mo., on Sunday, February 8, at 2:10 P. M. (Central Time), a distance of 1006 miles in 30 hours 10 minutes elapsed time. The actual running time was 25 hours 15 minutes.



Gasoline Motor Car on Lewisburg, Milton & Watsontown

Exterior and Interior Views of Car Built by J. G. Brill Co., Mack A-C Chassis—Note Seats for Three on One Side of Car—Has Seating Capacity of 40, Is 34 ft. Long Overall and 9 ft. 8 5/9 in. Wide. Passenger Compartment Finished in Cherry-Stained Mahogany



THE DESIGNERS of GE No. 3 were concerned with minimizing air resistance. No. 3 sported a McKeen-ish knife nose and even had its rooftop air whistle mounted at a rakish angle.

Keith Railway Equipment Company

General Offices:
122 South Michigan Ave.
Chicago

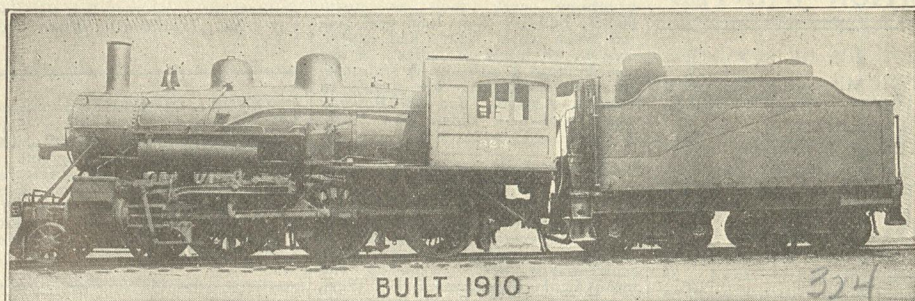
Manufacturers of
Steel Freight Cars

Shops at Hammond, Ind.

Located on B. & O. C. T. R. R.,
Pennsylvania Line, Wabash Rail-
way, South Shore Electric Line.

We Build Steel Underframes
Steel Freight Cars Repaired and Rebuilt
We Manufacture Tank Cars for Sale or Lease

Prepared to furnish on short notice tank car specialties and repair parts, standard to various types of cars.



Rails

LOCOMOTIVES, all types. COACHES—FREIGHT CARS, new and used. NEW CABOOSSES with steel center sills. All our equipment is in FIRST CLASS condition and PROMPT DELIVERIES assured. WE are EXPORTERS in the market for railroad equipment of all kinds.

GRAY & SON, Inc.

122 S. Michigan Avenue, Chicago, U. S. A.
WILLIS E. GRAY, President.

PACKING FOR SALE

The NAVY offers 150,000 pounds new packing for sale by sealed proposals, bids on which will be opened May 5, 1920, at 1:30 P. M.

This packing is divided into eighty-five lots and will be sold in amounts as desired.

Catalogues and other information may be obtained from the Board of Survey, Appraisal and Sale, Navy Yard, Norfolk, Va.

FOR SALE

Six used passenger coaches in good condition; wooden bodies; lengths 57 and 60 feet; seating capacities 56 and 60.

Mississippi Central
R. R. Co.
Hattiesburg, Miss.

FOR SALE

at IVES (near Racine),
WISCONSIN

THREE MILES OF RAIL-
ROAD
TEN THOUSAND CROSS
TIES
TEN THOUSAND FEET
SAWED SWITCH TIES

RUEL WRECKING CO.
U. S. IVES T. N. T. PLANT
Racine, Wisconsin

ATTENTION

Having just purchased from the United States Government, can offer you the following new track material at very exceptional prices.

75,000 tie plates, 6 1/2 x 10,
for 80 lb. rail
150,000 pieces of rail braces
for same type rail.
86,000 pair angle bars, 80
lb. rail, drilling 6 x 6 x 6.

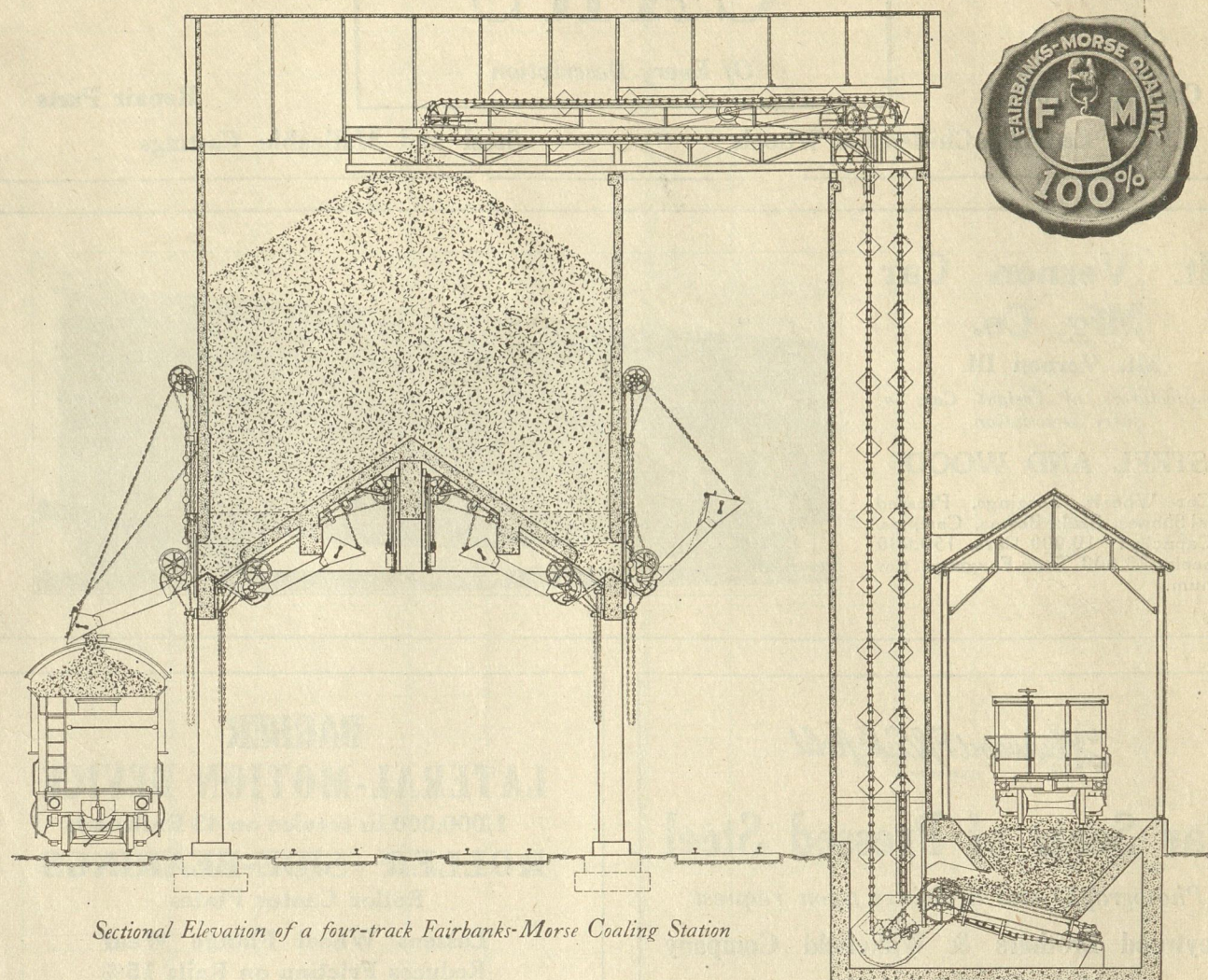
The above material located at Norfolk, Va.; Kearny, N. J., and Chicago, Ill.
All new, first quality steel, ready for immediate shipment.

M. K. FRANK
Frick Bldg., Pittsburgh, Pa.

WANTED

A bound volume of Railway Age from July-December, 1918. Box 93, Railway Age, Woolworth Bldg., New York, N. Y.

FAIRBANKS-MORSE COALING STATIONS



Sectional Elevation of a four-track Fairbanks-Morse Coaling Station



SCIENTIFIC construction of Fairbanks-Morse Coaling Stations insures low operating and low maintenance cost. They are simple in design, have no untried devices—are sturdy and serviceable.

Our Factories manufacture the machinery and coal handling facilities. We design and build the plant and deliver it to you tested and ready for service. There is no divided responsibility. We have built 500 coaling stations on over 100 Railroads in 18 years.

Fairbanks, Morse & Co.

MANUFACTURERS CHICAGO

Engines - Pumps - Motors - Hoists - Air Compressors - Fairbanks Scales - Sheffield Motor Cars - Stand pipes - Coaling Stations - Etc.

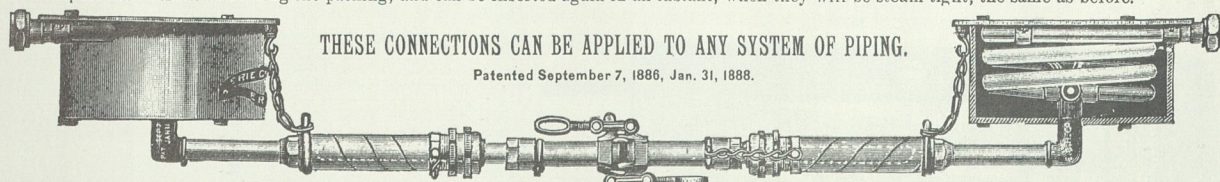
JOS. McCARTER, Pres. J. R. DROZESKI, Vice-Pres. and Supt. J. M. ORMSBEE, Sec'y and Treas. F. A. MIZENER, Gen'l Manager.

THE ERIE CAR HEATING CO.

Principal Office and Works, ERIE, PA.

HEATS RAILWAY CARS WITH STEAM FROM THE LOCOMOTIVE WITHOUT THE USE OF RUBBER HOSE OR GROUND METALLIC JOINTS,

by passing the steam through coils of seamless brass tubing placed one under each platform of every car, and which readily meet all possible side and vertical motions between the cars. Our Slip-joints, to meet the end motion, are so constructed that in case the train parts, the plunger will pull out without disturbing the packing, and can be inserted again in an instant, when they will be steam tight, the same as before.



THESE CONNECTIONS CAN BE APPLIED TO ANY SYSTEM OF PIPING.

Patented September 7, 1886, Jan. 31, 1888.

OUR NEW METALLIC COUPLINGS

are automatic when desired, and not depending upon the tension of a spring to keep them closed, are ABSOLUTELY Steam Tight.

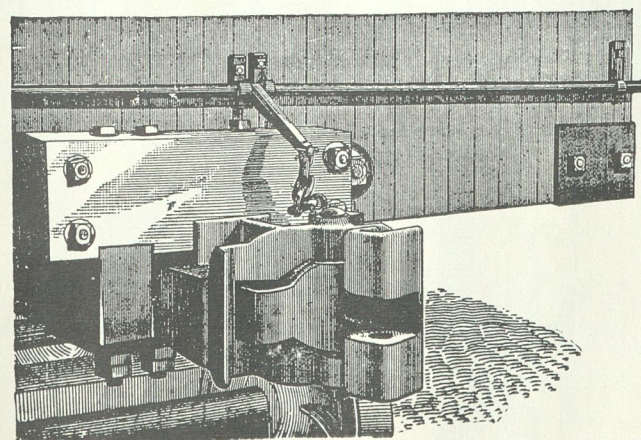
OUR TRAP, which readily removes all condensation, has been in service the past winter, with temperature at 35 degrees below zero, AND DID NOT FREEZE IN A SINGLE INSTANCE.

In continuous use on the Fort Wayne Division of the Pennsylvania Company's road since the spring of 1887; on the L. S. & M. S. and the N. Y., C. & St. L. roads for two seasons, and on the Duluth & Superior Branch of the N. P. R. R. and the St. Paul-Minneapolis Line of the Manitoba Railway the past winter, giving perfect satisfaction. We refer to the officials of any of the above roads.

We had two trains equipped with our connections last winter, using the "Johnson Heater" hot water piping, with a trifling change, and it was a perfect success.

Our Coils HAVE NEVER BROKEN, unless injured by accident; our connections NEVER allow any steam to escape between the coaches, and can be applied to any system of heating cars that requires steam.

SEND FOR ILLUSTRATED CATALOGUE.



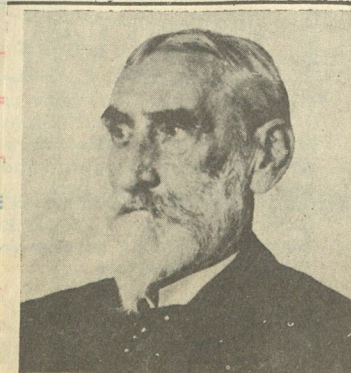
THE HIEN Gravity-Lock Car Coupler Co

Lime Rock, Conn.

Couples on a vertical plane, and locks by gravity. It is more nearly automatic than any other coupler, and owing to the small number of wearing parts and large plane surface exposed to buffing contact, it is believed to be the most durable and economical coupler. It is recommended for trial by the Executive Committee of the Master Car-Builders' Association. Cars equipped with this coupler are now in every-day use on the following roads:

Chesapeake & Ohio.
Chicago, Burlington & Quincy.
Chicago, Milwaukee & St. Paul.
Chicago, Rock Island & Pacific.
Housatonic.
Mercer County.
New Haven & Northampton.
New York, New Haven & Hartford

CORRESPONDENCE IS INVITED



Eli H. Janney

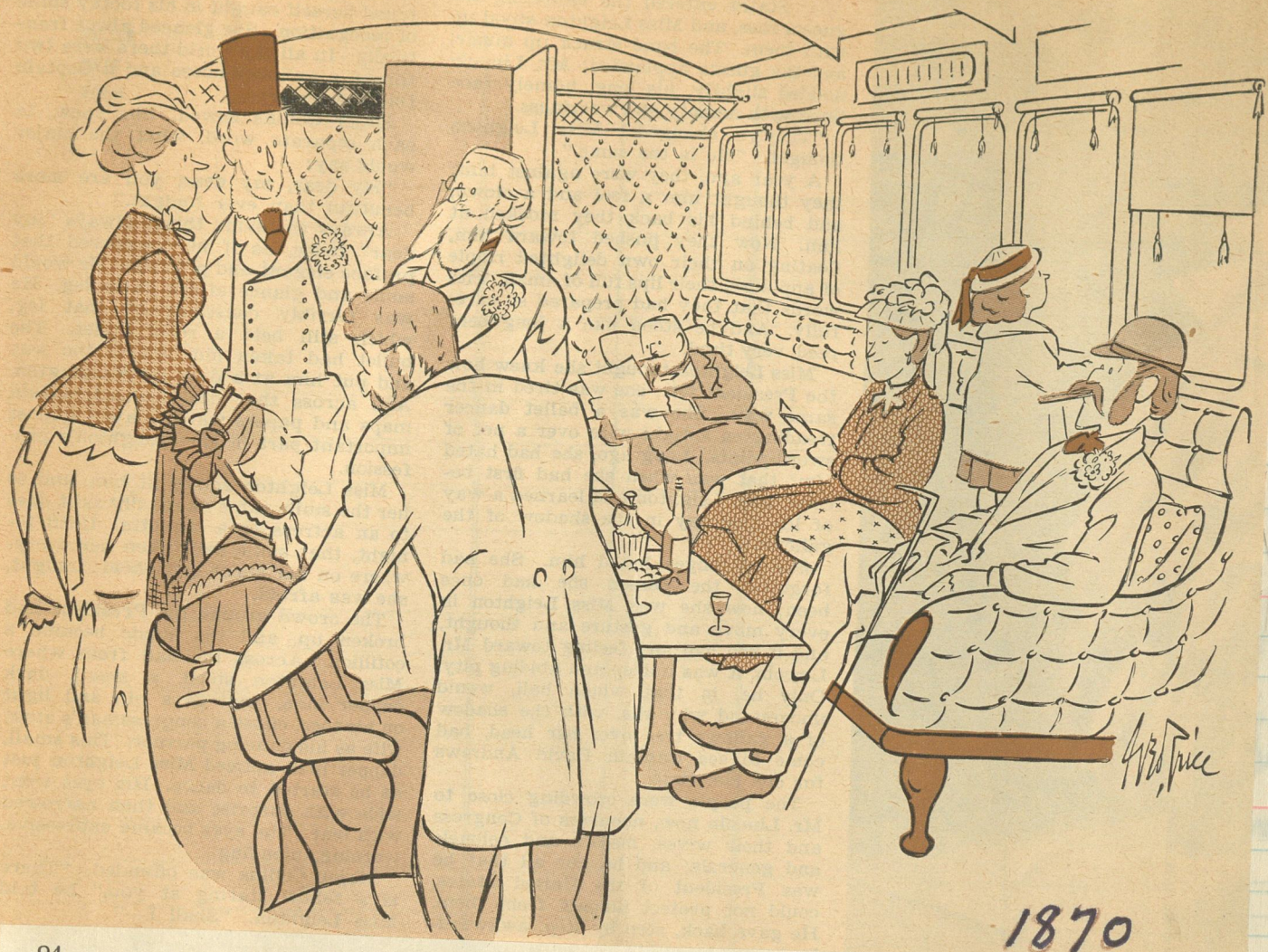
The invention and improvement of the automatic coupler occupied his time and thoughts over a period of twenty years before he succeeded in producing a coupler that met the exacting requirements of the Master Car-Builders' Association.

Neither an engineer nor a mechanic, the automatic coupler was the only device he ever invented.

Using a small pocket knife to whittle out his models, Janney designed a coupler for which he obtained a patent on April 21, 1868. However, his original patent had insufficient merit to meet the approval of the Master Car-Builders' Association. Finally, in 1873, he obtained a second patent for what proved to be the basic principle of the car coupler now in

general use, though it was still far from satisfactory. He obtained additional patents in 1874, 1879, and 1882. Finally, in 1887—twenty years after he put his mind to work on the problem—the Master Car-Builders' Association late the Mechanical Division of the Association of American Railroads, following years of extensive road tests, reduced the number of approved couplers to three, including Janney's. A year later the MCBA adopted the Janney coupler as standard.

His name will live as long as railroads endure.



1870

HALE & KILBURN SEATS

are in use upon
Nearly Every Important Railway in the United States and in Almost Every Foreign Country

The Reason?
"MERIT"



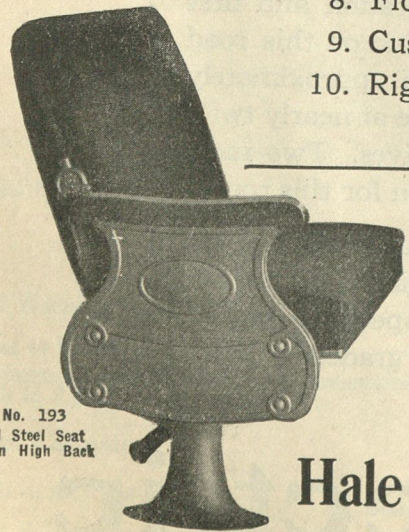
No. 194
All Steel Seat
Plain High Back



No. 197
All Steel Seat
Headroll Back

Ten Points of Superiority

1. Neatness and Symmetry of Design
2. Extreme Ease in Operation
3. No Lifting of Back in Reversing
4. No Loose Pivoted Joints
5. Fewer Parts to Get Out of Order
6. All Parts Jigged for Interchangeability
7. Seamless Drawn Steel Pedestals
8. Floor Pedestal Integral with Main Frame
9. Cushion and Back Frames all Pressed Steel
10. Rigid Automatic Swinging Foot-Rest



No. 193
All Steel Seat
Plain High Back

Walkover Steel Seats

For Every Class of Service



No. 197
All Steel Seat
Open Steel End

Hale & Kilburn Corporation

American Motor Body Co. Successors

SALES OFFICES:—New York Chicago WORKS: PHILADELPHIA St. Louis Washington Louisville Atlanta Frisco



1944

Dining at 30 miles an hour—these early railroad travelers enjoyed the very best. Even then, the railroads spared no effort to see that food and service rivaled the finest restaurants of the day.

Service has always been first on the railroad menu...



And today America enjoys constantly improving railroad service

To the men who moved westward with a growing America, railroad service meant much more than the novel luxury of the dining car. In fact, the steel rail itself became the very backbone which made possible America's vigorous growth.

And to you, today, railroad service is even more important, because now our way of life depends more than ever on fast, efficient rail transportation. Only the rail-

roads can do the big, basic job of economically moving the mountains of goods which America produces. To improve this service, the railroads have spent more than 9 billion dollars since the end of World War II.

The railroads are continuing to spend huge sums for new track, cars, locomotives, signals—all the things it takes to make railroad service even more efficient

and more economical. As a taxpayer, you'll be glad to know that all this money is raised by the railroads—none of it comes from your taxes.

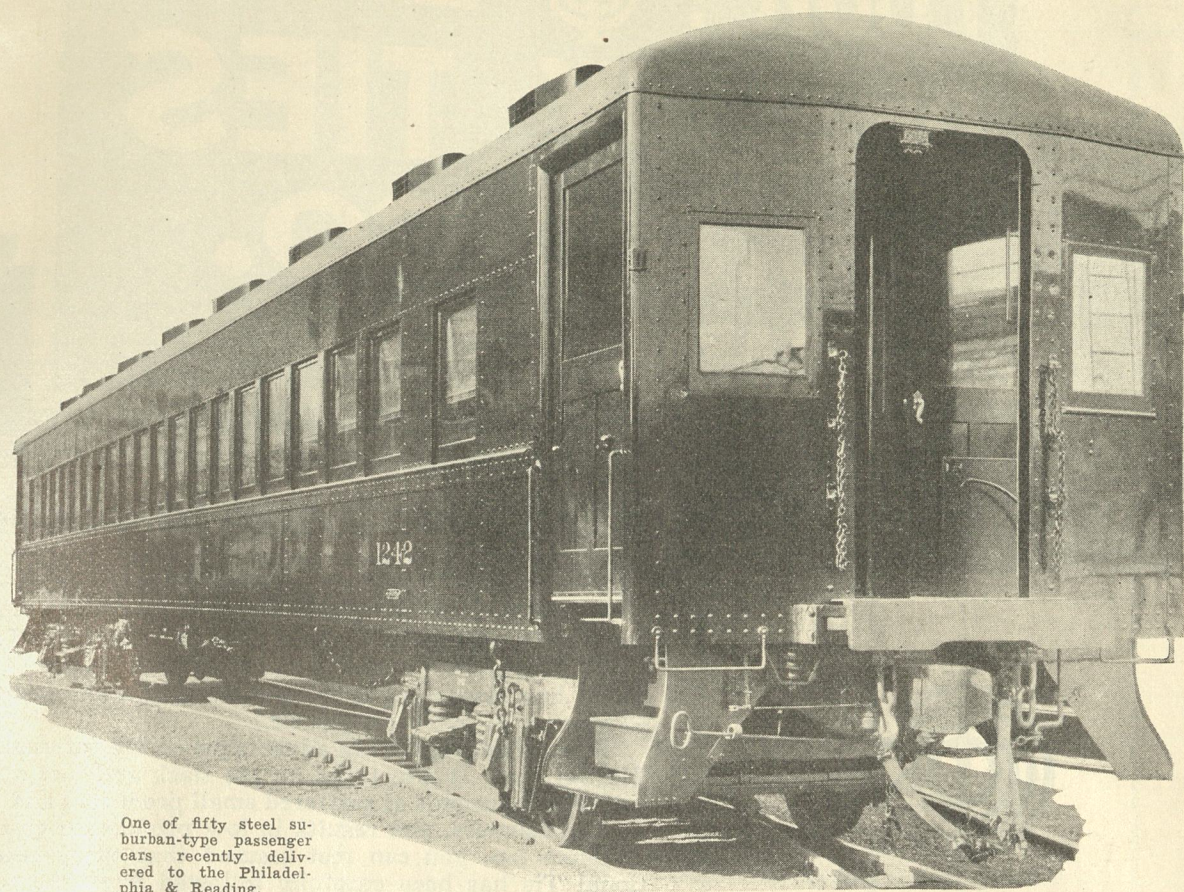
This money buys progress for the railroads—and for all America. It's one big reason why America's railroads can carry more tons, more miles than all other forms of transportation combined—and do it at a lower average charge than any other form of general transportation.



Clos. No.

Amount

BETHLEHEM



One of fifty steel suburban-type passenger cars recently delivered to the Philadelphia & Reading.

Bethlehem-Built

All-Steel Suburban Type Passenger Car for the Philadelphia & Reading

These cars are of particular interest in that their design gives them light weight with the same strength as main line cars, and at the same time provides the maximum seating capacity.

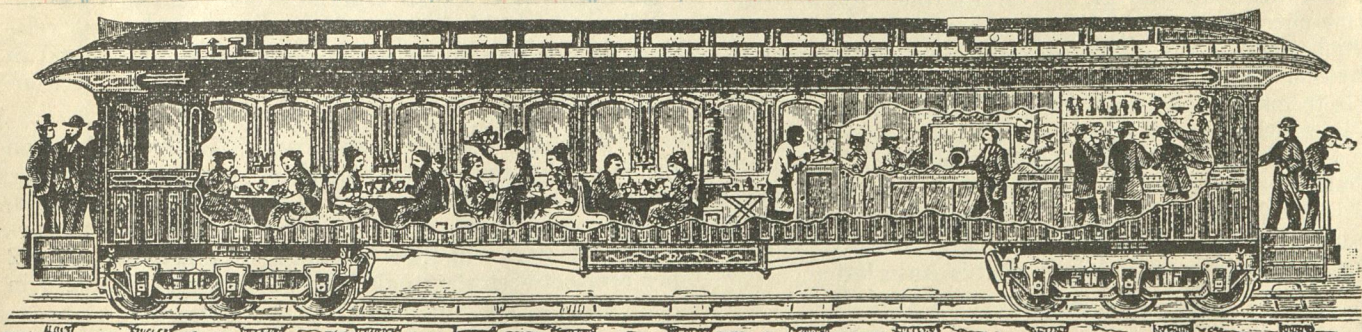
BETHLEHEM SHIPBUILDING CORPORATION, LTD., BETHLEHEM, PA.

General Sales Offices: NEW YORK CITY

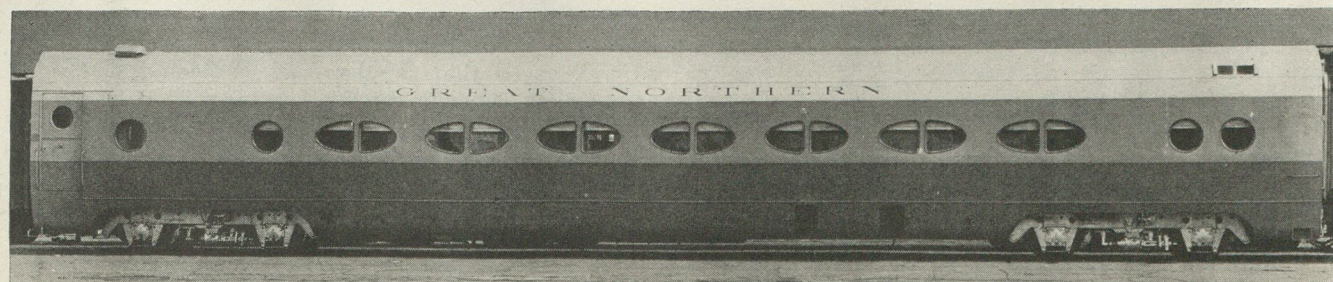
Car Works: HARLAN PLANT, WILMINGTON, DEL.

Formerly Harlan and Hollingsworth Corporation

Car Builders Since 1836



Interior Arrangement of a Dining Car of 1875.



Pendulum Car Built for the Great Northern by the Pacific Railway Equipment Company 1941

a.c.f.
Passenger Cars

THOROUGHBREDS OF THE RAILS..

TABLE II—ORDERS FOR PASSENGER CARS SINCE 1901

Domestic Orders Only			
Year	Passenger Cars	Year	Passenger Cars
1901	2,879	1909	4,514
1902	3,459	1910	3,881
1903	2,310	1911	2,623
1904	2,213	1912	3,642
1905	3,289	1913	3,124
1906	3,402	1914	1,674
1907	1,791	1915	1,978
1908	1,319		

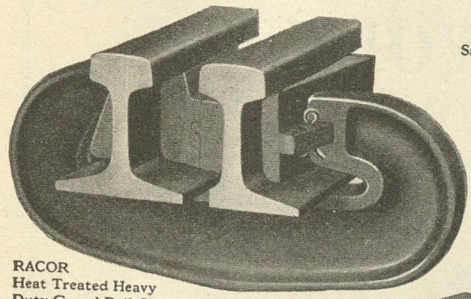
Domestic and Foreign				
Year	Domestic	Canadian	Export	Total
1916	2,302	...	109	2,411
1917	1,124	...	43	1,167
1918	9	22	26	57
1919	292	347	143	782
1920	1,781	275	38	2,094
1921	246	91	155	492
1922	2,382	87	19	2,488
1923	2,214	263	6	2,483
1924	2,554	100	25	2,679
1925	2,191	50	76	2,317

1941

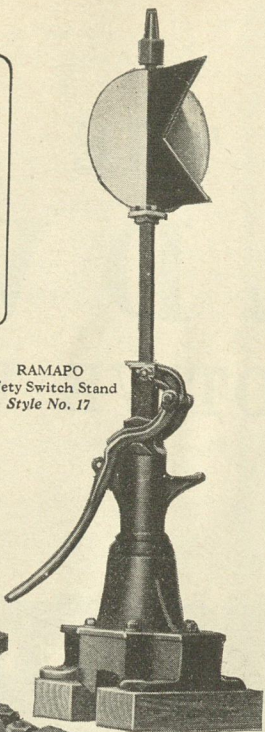
RACOR

SEVEN WORKS
RAMAPO-AJAX-ELLIOT
HILLBURN, NEW YORK
NIAGARA FALLS, N.Y.
CHICAGO, ILLINOIS
EAST ST. LOUIS, ILL.
PUEBLO, COLORADO
SUPERIOR, WISCONSIN
NIAGARA FALLS, CANADA

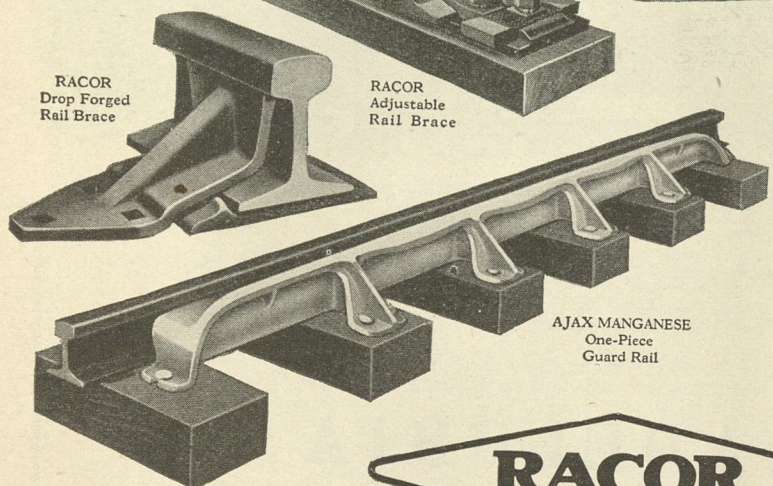
RAMAPO
Safety Switch Stand
Style No. 17



RACOR
Heat Treated Heavy
Duty Guard Rail Clamp



HEAVY DUTY HEAT TREATED
GUARD RAIL CLAMPS
DROP FORGED RAIL BRACES
ADJUSTABLE RAIL BRACES
EUREKA ADJUSTABLE CLIPS
MANGANESE REINFORCED
SWITCH POINTS
RAMAPO AUTOMATIC
SAFETY SWITCH STANDS
AJAX MANGANESE ONE-PIECE
GUARD RAILS
SWITCHES - FROGS
CROSSINGS - SPECIAL
RAILWAY TRACK WORK

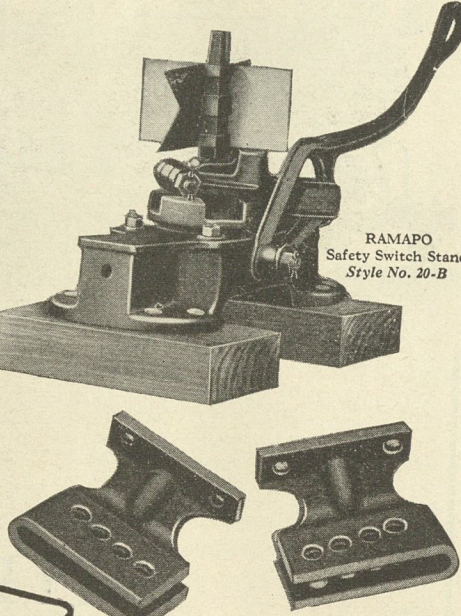


RACOR
Drop Forged
Rail Braces

RACOR
Adjustable
Rail Braces

AJAX MANGANESE
One-Piece
Guard Rail

RACOR
TRADE MARK



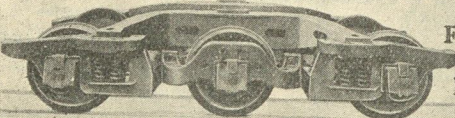
EUREKA ADJUSTABLE
Open Side Switch Clip

Main Office - HILLBURN, NEW YORK
SALES OFFICES AT WORKS, ALSO
30 CHURCH STREET, NEW YORK
McCORMICK BUILDING, CHICAGO

RAMAPO AJAX CORPORATION

BOYDEN SIX WHEEL CO-ORDINATING TRUCK

No Nuts
Bolts
or Rivets



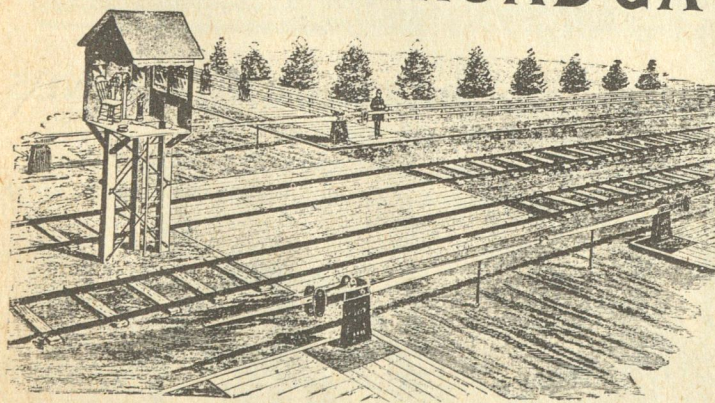
Free Radial
Axle
Movement

PATENTED & PATENTS PENDING
BOYDEN STEEL CORPORATION

Standard Oil Bldg.
BALTO. MD.

1923

MILLS RAILROAD GATE CO.



MANUFACTURERS OF

Air, Lever, and Cable Gates for Railroad Crossings.
OFFICE, 218 La Salle St.
FACTORY, 171 and 173 South Canal St. CHICAGO, ILL.

IS GUARANTEED
TO BE THE BEST
RAILROAD GATE
MADE.
Of the Railroads
using the MILLS
GATE, we refer to,
Chicago, Ill. - Chi-
cago & Northwest'n;
Chicago & Grand
Trunk; Chicago, St.
Louis & Pittsburgh;
Chicago & Western
Indiana; Chicago &
Great Western, and
Delaware & Hudson
Canal Co., Albany,
N. Y.

M. C. B. Couplers

We are prepared to furnish the new M. C. B. Standard
TYPE "D" COUPLERS
and also
REGULAR STANDARD

Pitt
Janney X and
Penn Couplers

For Freight Cars and Locomotives

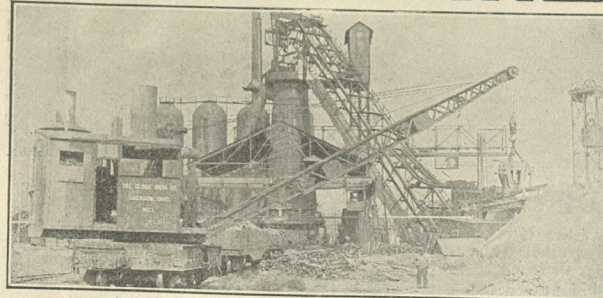
Pitt Pivoted Passenger Couplers
Narrow Gauge Couplers in either 3/4 size or 1/2 size
designs.

Write for blueprints and prices.

The McConway & Torley Co.
Pittsburgh, Pa.

1920

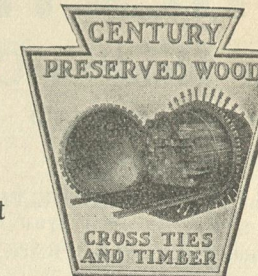
LOCOMOTIVE OHIO CRANE



The Ohio Locomotive Crane Co., Bucyrus, O.
Chicago Office, Railway Exchange Bldg.-New York, 30 Church St.

CENTURY WOOD PRESERVING CO

Creosote
Treatment
Zinc
Treatment



Specialty
Furnishing cross
ties, switch ties,
poles and lumber
for railroads and
industrial plants.
Every industrial
plant and railroad
should use treated
material for their
tracks and wood
structures, which
will reduce main-
tenance charges and
help conserve our
forests.

Operating Plants: Pittsburgh Wood Preserving Co., Adelaide, Pa. Ohio
Wood Preserving Co., Orrville, Ohio. Michigan Wood Preserving Co., Reed
City, Mich. New England Wood Preserving Co., Nashua, N. H.
Offices: 1053 Century Bldg., Pittsburgh, Pa. 618 Chamber-Commerce Bldg.,
Boston, Mass.

Gulf States Creosoting Company
PLANTS AT MERIDIAN, MISS.; HATTIESBURG, MISS.;
and SLIDELL, LA.
MAIN OFFICE-Hattiesburg, Miss.

Creosoted Material

Including
Lumber, Timbers, Piles, Telephone and Tele-
graph Poles and Cross-Arms, Paving Blocks,
Cross-Ties, Etc.

Capacity 120,000,000 feet B. M. per Annum
Facilities for shipping by rail or water



ORTON 608 S. Dearborn St.
STEINBRENNER CO. Chicago - Illinois

RAIL ANTI-CREEPERS

CHICAGO

THE P. & M. CO.

NEW YORK

Montreal

London

Paris

Calcutta

Sydney

P & M
Vaughan
Henggi
Fair
Yardley

UNION SPRING & MANUFACTURING CO.

Coil Springs, Elliptic Springs, Steel Castings, Pressed Steel Spring Plates and Pressed Steel Journal Box Lids
KENSINGTON JOURNAL BOX-All Steel

50 Church St., New York, N. Y.
Fisher Bldg., Chicago, Ill.
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WORKS-NEW KENSINGTON, PA.
PITTSBURGH OFFICE-300 GRANITE BLDG.

For detailed descriptions see Car and Locomotive Cyclopedia, 1925 Editions

Todd Building, Louisville, Ky.
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Crozier Building, Philadelphia, Pa.

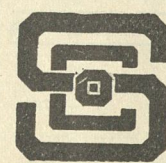
"AXLE SPECIALISTS
SINCE 1866"

CAR AXLES

J. R. JOHNSON & CO., INC.
FORGED STEEL AXLES

FOR LOCOMOTIVES, PASSENGER, FREIGHT AND ELECTRIC CARS
SMOOTH FORGED OR ROUGH TURNED-CARBON OR ALLOY STEEL-PLAIN OR HEAT TREATED
FORGED AND TURNED PISTON RODS, CRANK PINS, LARGE SHAFTS, ROUND BARS, ETC.

ADDRESS ALL MAIL TO
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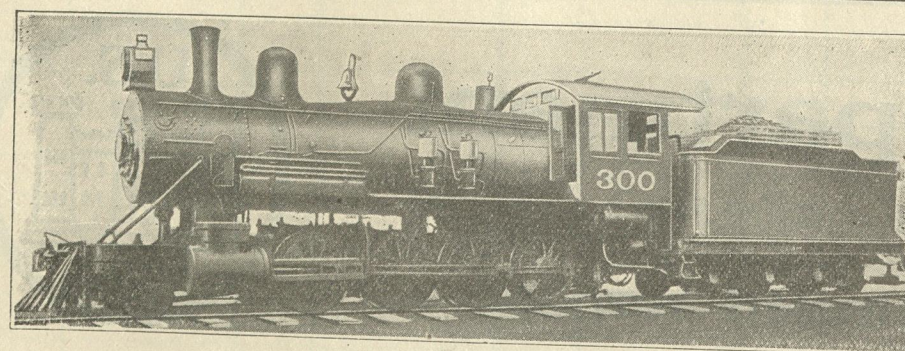


CAR LIGHTING

"UNDER-FRAME" Electric
"PUTNAM" Storage Batteries
"SAFETY" Lighting Fixtures, Electric and Gas

THE SAFETY CAR HEATING AND LIGHTING CO.
NEW YORK CHICAGO PHILADELPHIA BOSTON ST. LOUIS SAN FRANCISCO MONTREAL

MANUFACTURED
BY THE
SAFETY
CAR HEATING AND
LIGHTING CO



Rails

LOCOMOTIVES, all types. COACHES-FREIGHT CARS, new and
used. NEW CABOOSSES with steel center sills.
All our equipment is in FIRST CLASS condition and PROMPT DELIV-
ERIES assured.
WE are EXPORTERS in the market for railroad equipment of all kinds.

GRAY & SON, Inc.

122 S. Michigan Avenue, Chicago, U. S. A.
WILLIS E. GRAY, President.

1920

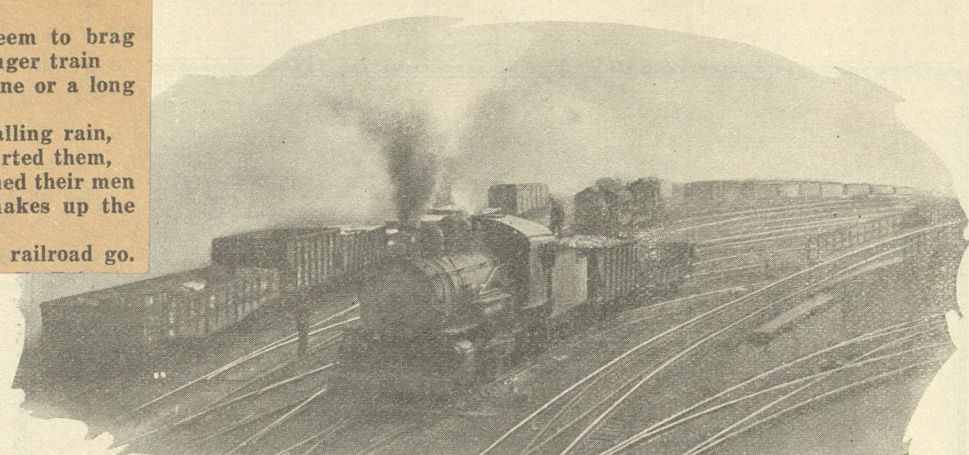
THE SWITCH ENGINE SPEAKS

RAILWAY AGE

December 12, 1925

I'M only a little switching jack
Who shuffles the cars both night and day
Up and down on the old rip track;
But, at least, I've this much to say:
That I tell you, boys, my job's right fine,
I train the new tallowpots for the line,
I'm the easy post for the old hogheads
And I couple the diners to the limiteds.

Of course, I don't want to seem to brag
But whenever you see a passenger train
Come storming through sunshine or a long
freight drag
Come bellowing through the falling rain,
You'll know it was me who started them,
You'll know it was me who trained their men
And you know it's me who makes up the
tow,
You can bet it's me makes this railroad go.



YARD.. A system of tracks within defined limits provided for the making up of trains, sorting of cars and other purposes, over which movements not authorized by timetable, or train order, may be made, subject to prescribed signals and rules, or special instructions.

Switchers That Work on 30% Less Fuel

SWITCHERS are notoriously "coaleaters". They work much of the time at full stroke. Expansive use of steam, a fundamental principle of fuel economy, is violated. Fuel consumption is high.

But include The Limited Cut-Off in the design of the new switchers and fuel will be put to work effectively. Recently built switchers using The Limited Cut-Off are doing the same job for 30% less fuel.

The Limited Cut-Off also permits a lower factor of adhesion to be used since there is less tendency to slip the drivers.

For switch engine economy you need The Limited Cut-Off.

Franklin Railway Supply Company, Inc.
17 East 42nd Street, New York

332 So. Michigan Avenue Chicago, Ill. Boatmens Bank Bldg. St. Louis, Mo. 774 Monadnock Bldg. San Francisco, Cal.

Franklin Railway Supply Company, Limited, Montreal
Export Department—International Railway Supply Co.—30 Church St., New York

The Limited Cut-Off

secures expansive use of steam throughout the entire range of locomotive operation

100 YEARS OF MANUFACTURING EXPERIENCE



Car Seat
Webbing
for
Repairs

No Better Coach Seat Could Be Built

THIS Heywood-Wakefield steel coach seat has long been a standard on many leading railroads. It is especially built to withstand unusual conditions of service. If in doubt about renewal or initial seating equipment, ask the Railroad seat expert at any sales office. His counsel is free.

Heywood-Wakefield
REG. U.S. PAT. OFF.

HEYWOOD-WAKEFIELD SALES OFFICES

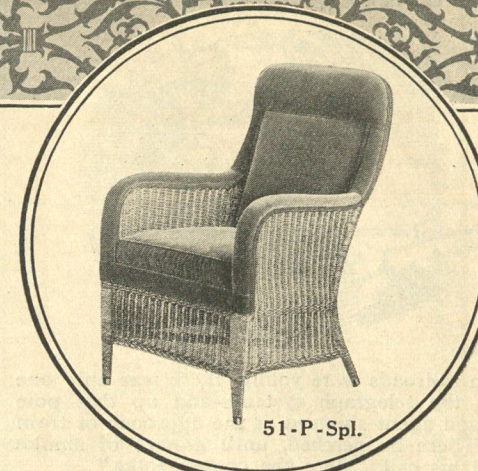
Heywood-Wakefield Co., Wakefield, Mass.
Heywood-Wakefield Co., 516 West 34th St., New York, N. Y.
Herbert G. Cook, Hobart Bldg., San Francisco, Cal.
The G. F. Cotter Supply Co., Houston, Texas.
Heywood-Wakefield Co., 439 Railway Exchange Bldg., Chicago, Ill.
Frank N. Grigg, 630 Louisiana Ave., Washington, D. C.
The Railway and Power Engineering Corp.
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

bks. (Eureka 2353)
ted in U. S. A.

CUT HERE
To Make
Short Sheet

67

100 YEARS OF MANUFACTURING EXPERIENCE



51-P-Spl.

H-W Railroad Coach Seats Very Comfortable

THIS new, comfortable H-W Club Car Chair has upholstered arms and headroll. Here is another fine example of Heywood-Wakefield's modern line of railroad coach seats. Free consulting service is maintained at all H-W Sales Offices. Write for information.

Heywood-Wakefield
REG. U.S. PAT. OFF.

HEYWOOD-WAKEFIELD SALES OFFICES

Heywood-Wakefield Company, Wakefield, Mass.
Heywood-Wakefield Co., 516 West 34th St., New York, N. Y.
Heywood-Wakefield Co., 439 Railway Exchange Bldg., Chicago, Ill.
Herbert G. Cook, Hobart Bldg., San Francisco, Cal.
Frank N. Grigg, 630 Louisiana Ave., Washington, D. C.
The G. F. Cotter Supply Co., Houston, Texas
The Railway and Power Engineering Corporation,
Montreal, Toronto and Winnipeg, Canada

1926

10

RAILWAY AGE

August 26, 1922

A Tractor for Heavy Duty

The Whiting Turntable Tractor is a simple rugged design built to stand up under most severe service.

Whiting Tractors are delivered completely assembled even to the wiring, saving time and money when installing.

Specifications on request.

WHITING CORPORATION

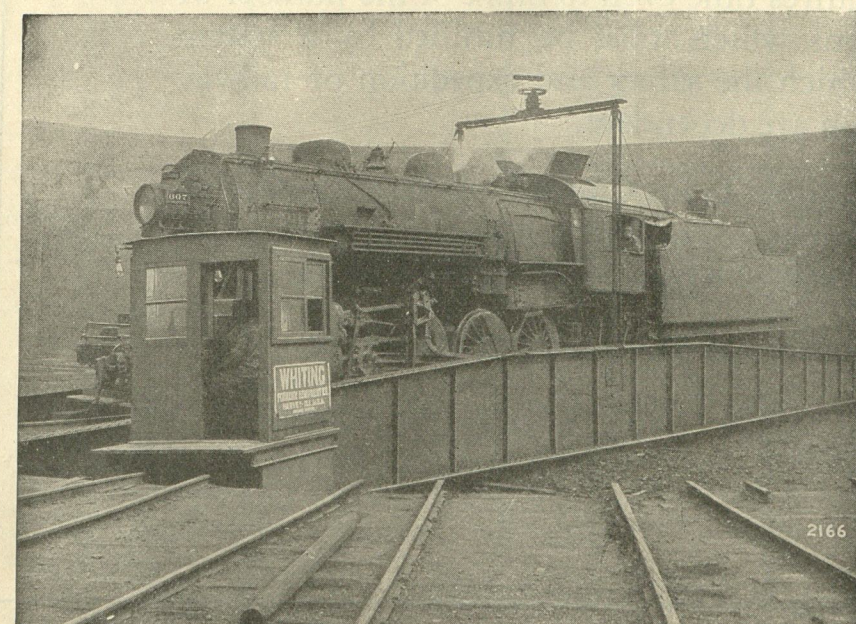
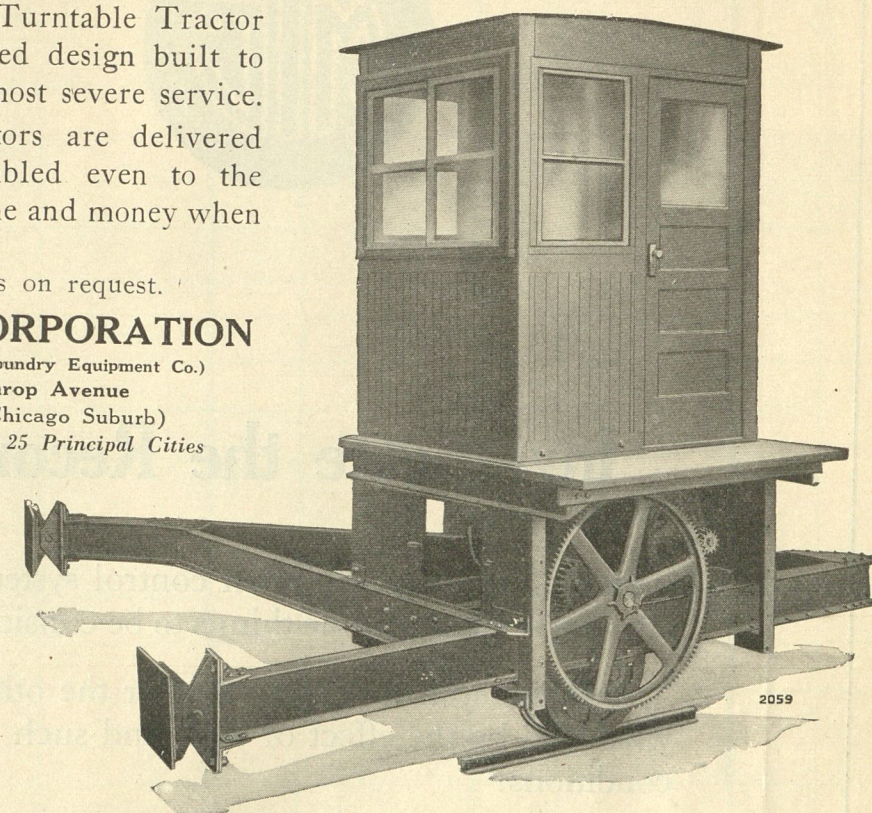
(Formerly Whiting Foundry Equipment Co.)

15603 Lathrop Avenue

Harvey, Ill. (Chicago Suburb)

Representatives in 25 Principal Cities

All machinery is located underneath cab floor, enclosed on all sides in sheet steel housing, which has been removed in this cut to show machinery. Sliding doors give ready access for inspection and repair. Send for Railway Equipment Catalog No. 160.



Whiting Turntable Tractor in service at Pere Marquette Railroad Shops, Saginaw, Michigan.

EDWARDS' TRAP DOORS AND FIXTURES

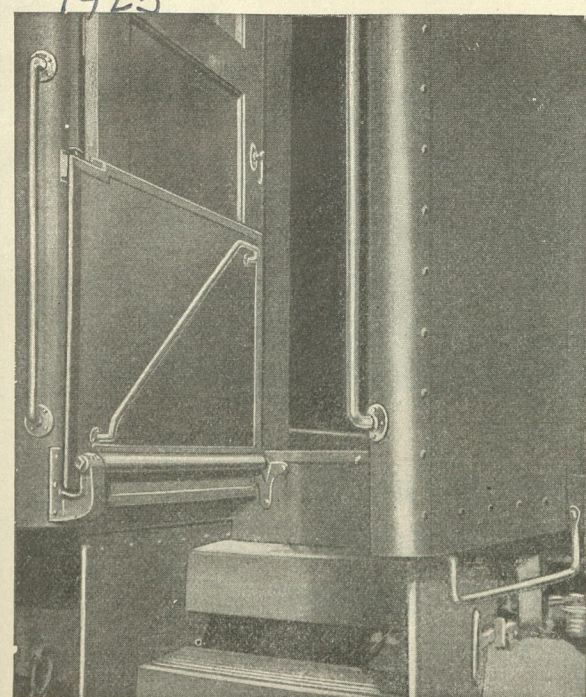
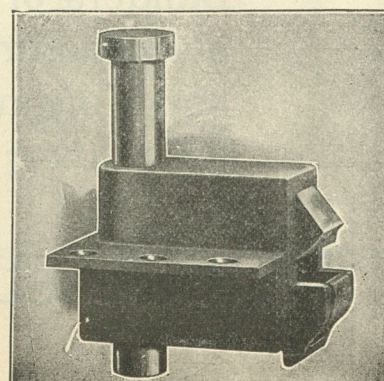
To Eliminate Delays

For freedom from repairs and renewals — The convenience and safety of passengers — Accessibility and simplicity of operations —

Durable—Positive in Action

Specify Edwards' TRAP DOORS and Plunger Locks for Your Passenger Cars

Canadian Representative
LYMAN TUBE & SUPPLY CO., Ltd.
Montreal and Toronto



High Station Platform Trap Door in Open Position

THE O. M. EDWARDS COMPANY, INC.

Chicago

Window Fixtures

All Metal Sash Balances

Metal Stop Casings

SYRACUSE, N. Y.

Top, Bottom and Side

Weather Stripping

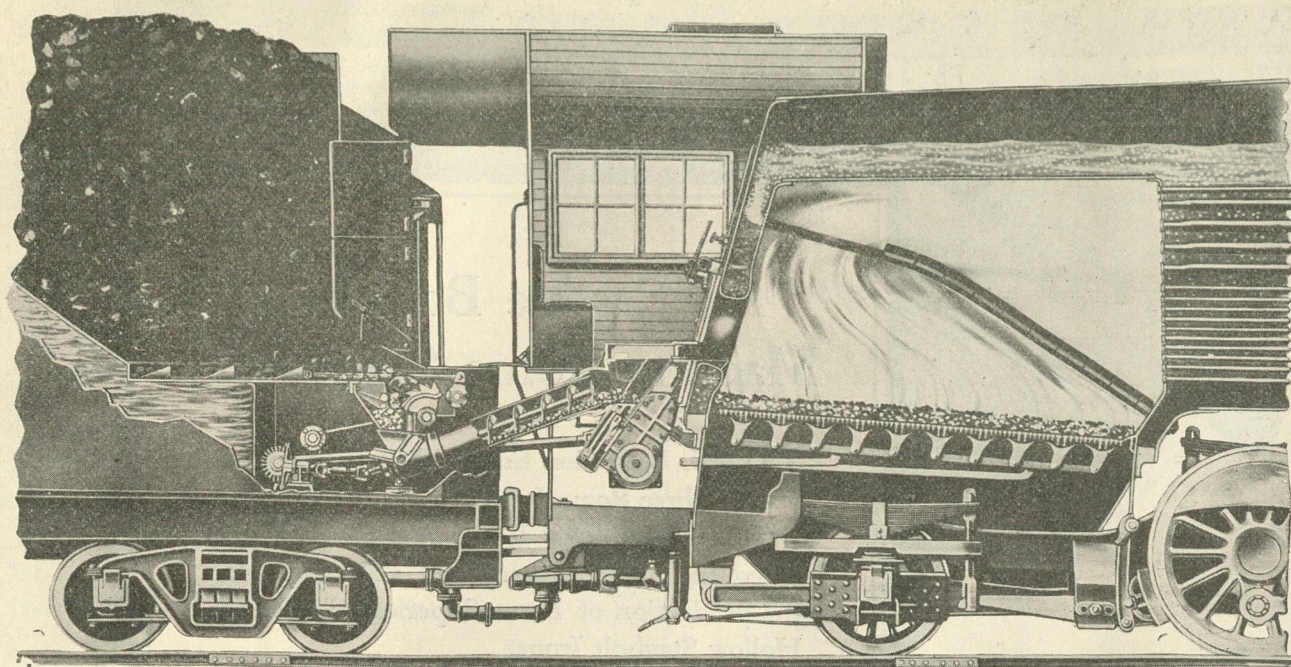
New York

Metal Extension Platform

Trap Doors and Trap Door Locks

WHITING

CRANES
FOUNDRY EQUIPMENT
RAILWAY SPECIALTIES



Elvin Mechanical Stokers

Automatically maintain even distribution of small charges of crushed coal, the proper admission of air, and the exclusion of steam combine to produce an even, thin, clean fire, giving intense heat with ideal combustion.

The uttermost efficiency of every pound of coal burned.

A material decrease in the amount of fuel used, and the maximum of steam production. These are factors which enable you to move the greatest tonnage with the minimum of operating firing costs.

For detailed description see
LOCOMOTIVE
CYCLOPEDIA
1922 Edition

The Elvin Mechanical Stoker Company
50 Church Street
New York, N. Y.

Thank You, Mr. Warren, of the Michigan Central

Perhaps you don't realize how much it means to us to get letters like yours from men who know good scoops when they see them. Maybe we don't shake ourselves by the hand and pat ourselves on the back when some engineer or fireman climbs down from his cab to pen us a letter. We get lots of them, but we are always hungry for more.

It makes us feel more than proud of old Red Edge when you write:

"Recently a brand of scoops bearing your name have been in service on the M. C. R. R., where I am employed. I have had nearly 15 years of experience as a fireman and engineer, and this scoop of yours is the first one I ever felt deeply enough interested in to spend postage to address the makers. Not only is this brand tough—a quality to be desired—but light and properly hung. It will never wear out. But should one be broken accidentally, I hope your firm will put two in its place."

If you are over in our neighborhood you must drop in for a long chin-chin about shovels and shoveling.

Yours sincerely,

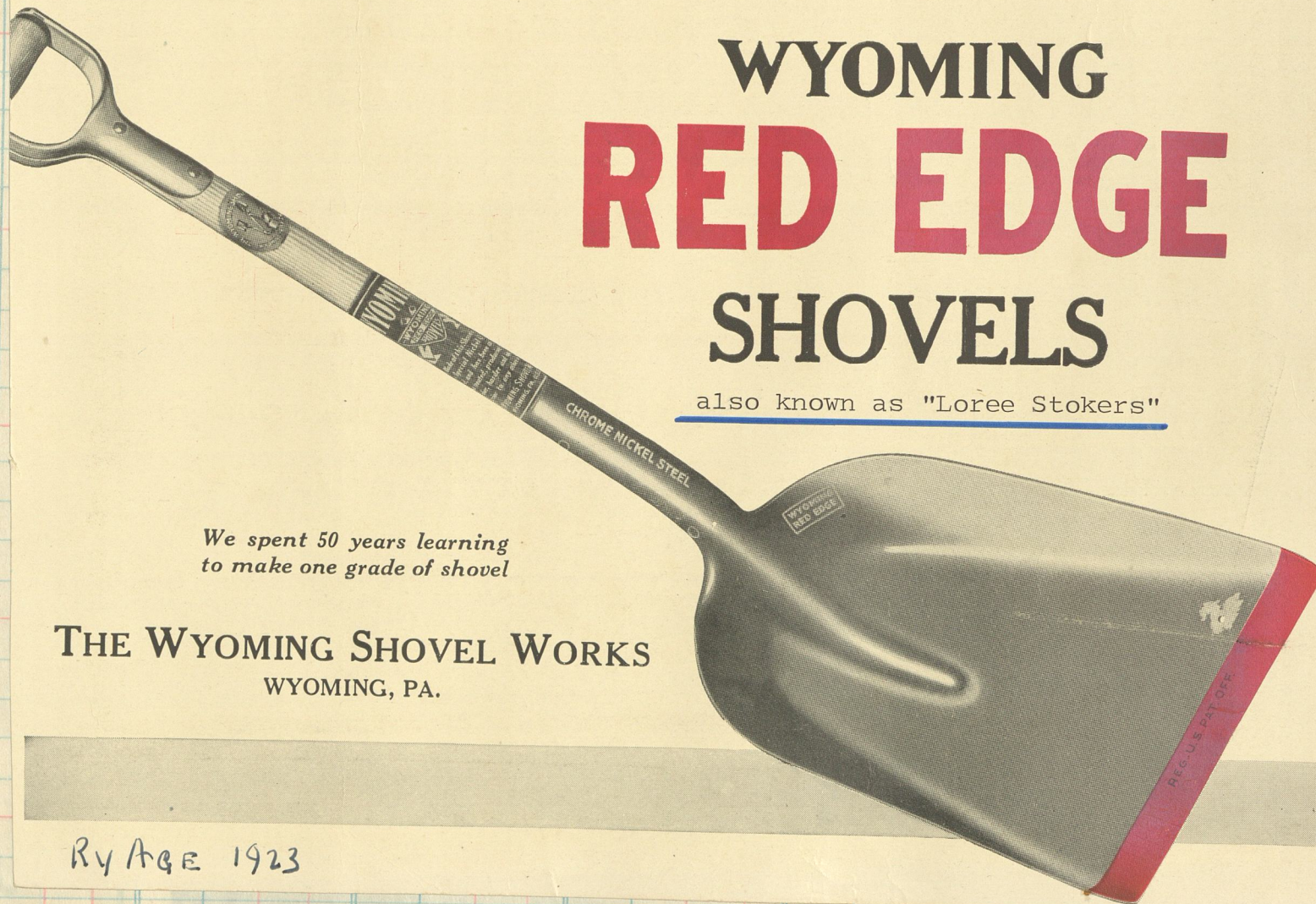
THE WYOMING SHOVEL WORKS

WYOMING RED EDGE SHOVELS

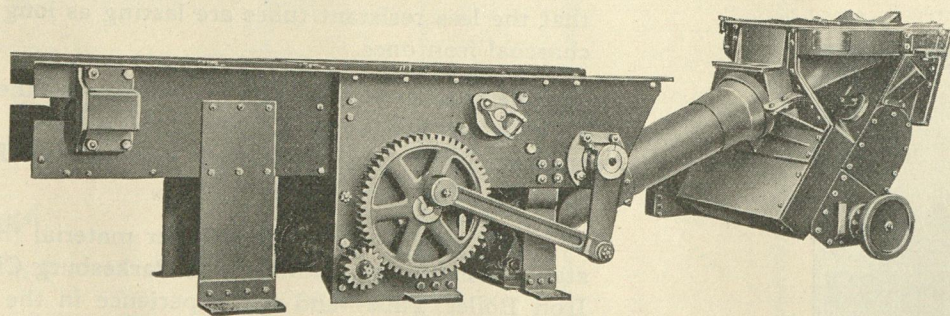
also known as "Loree Stokers"

We spent 50 years learning
to make one grade of shovel

THE WYOMING SHOVEL WORKS
WYOMING, PA.



Ry Age 1923



"ALCO BUILT"

For detailed description see
LOCOMOTIVE
CYCLOPEDIA
1922 Edition

The Elvin Mechanical Stoker Company
50 Church Street
New York City

NO railroad of today can question the practical application of mechanical stoker equipment as essential to securing maximum locomotive capacity.

They do question, however, unsupported claims as a substitute for stoker performance.

It is not what a stoker will do, but what it is doing in actual service that forms the real basis for decision today—a basis that serves only to confirm and strengthen the performance given by Elvin Stokers.

Elvin Stokers are demonstrating their leadership by the thoroughness of their work.

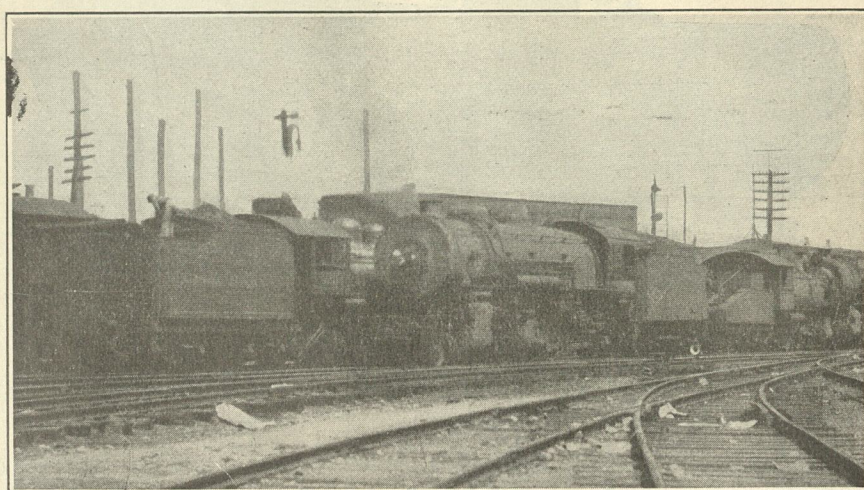
Among their outstanding features are: Ease of installation, maximum cab room, simplicity of construction—light weight without sacrifice of strength, capacity or durability. Accessible working parts. Economy in operation and fuel consumption. "Alco Built" to assure mechanical excellence.

Where the utmost in stoker service is demanded, Elvin is given preference.

The Elvin Mechanical Stoker Company
50 Church Street
New York, N. Y.

Clos. No. Sold Amount

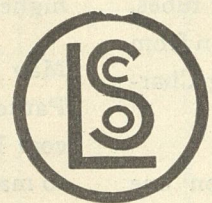
OVER 600,000 MILES WITHOUT A STOKER FAILURE



DURING the first six months of 1922 fifty-six Duplex Stoker-fired locomotives on one of the leading railroads of the United States made a record of over 600,000 miles without a single stoker failure.

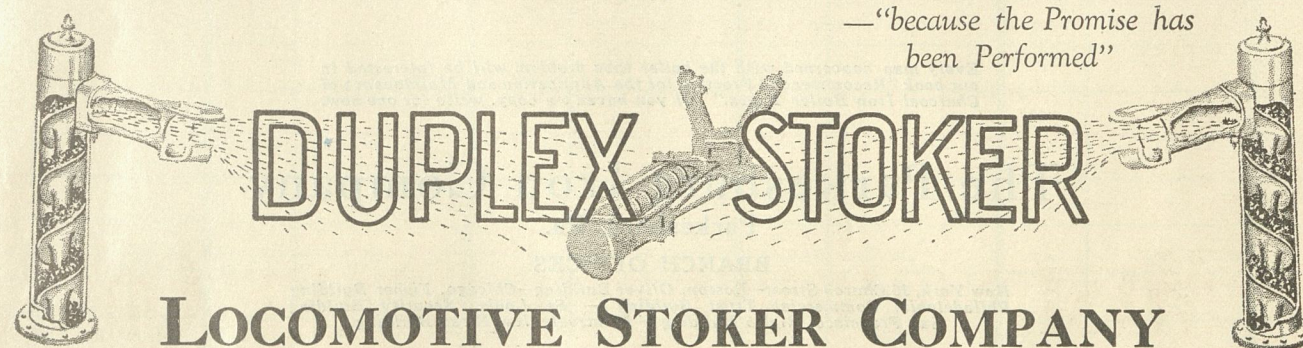
This is equivalent to one locomotive running 60 miles an hour continuously for more than a year, during which it would encircle the globe 26 times!

Nothing could better emphasize the remarkable dependability of the Duplex Stoker.



4,800 of our Stokers in Service on 76 Railroads

—“because the Promise has been Performed”



LOCOMOTIVE STOKER COMPANY

Main Office and Works: Pittsburgh, Pa.

50 Church Street
NEW YORK

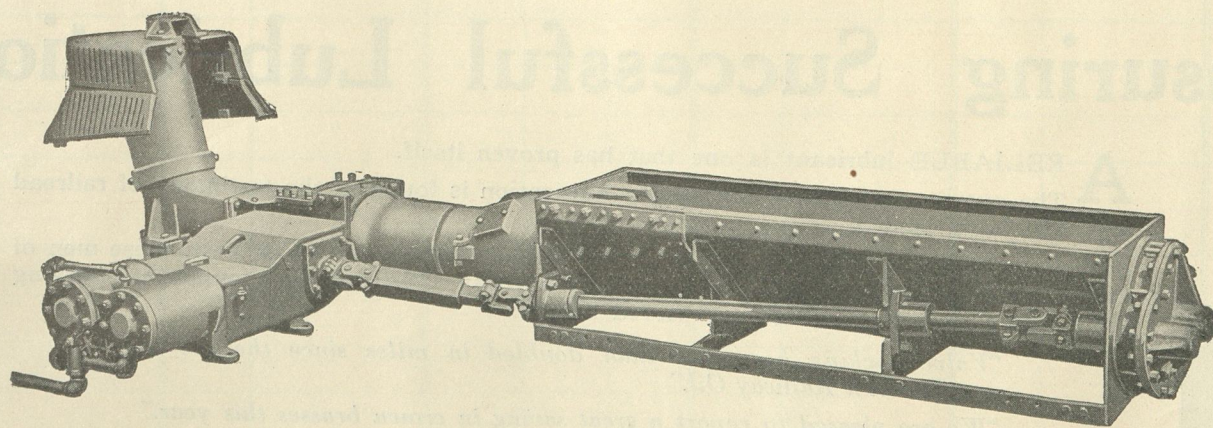
Munsey Bldg.
WASHINGTON

Railway Exchange Bldg.
CHICAGO

October 2, 1926

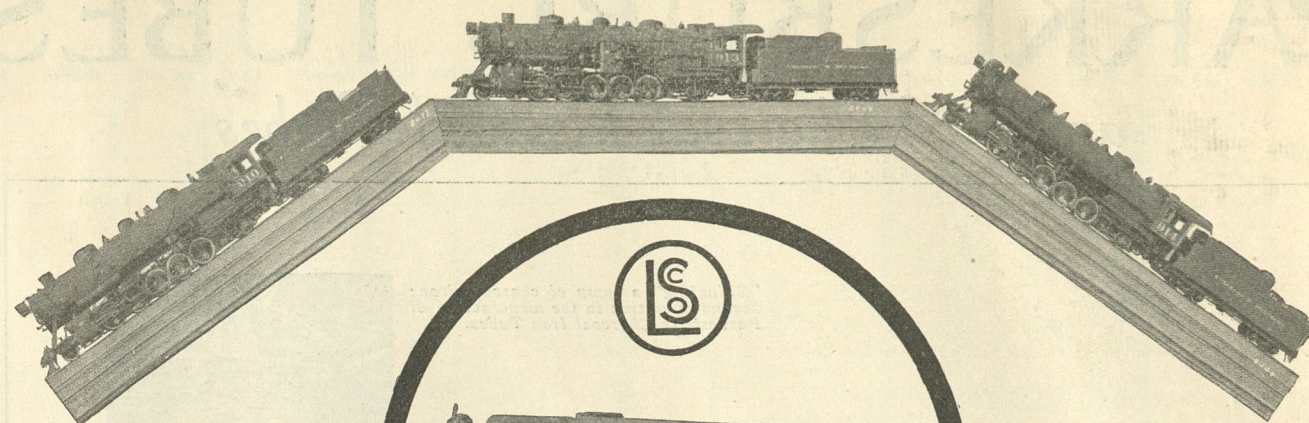
RAILWAY AGE

59

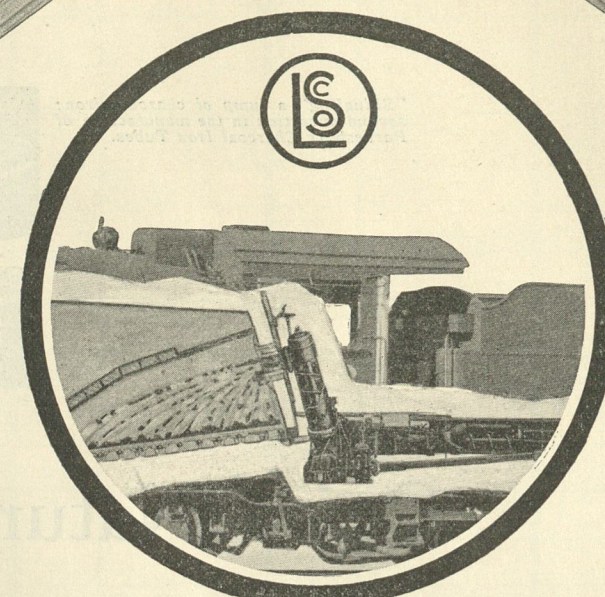


A Complete Service Record— not an isolated case

DURING the first three months of 1926 throughout the entire country there were only three detentions due to DUPONT-SIMPLEX TYPE “B” STOKERS.

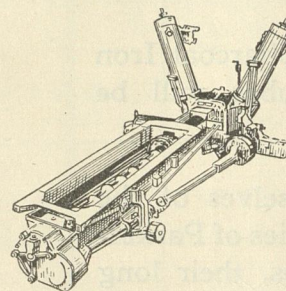


New
COLORADO
and
SOUTHERN
Locomotives



fired by

DUPLEX STOKERS



DUPLEX Stokers are firing the new Santa Fe type locomotives recently placed in service on the Colorado and Southern Railroad.

As the photographs show, these locomotives were built in three different designs, although the main characteristics are the same. The Duplex Stoker was equally applicable and advantageous in each case.

Duplex Stokers can be successfully applied to any locomotive. Locomotives thus equipped give better service. The records of 78 railroads prove it.

5,000 of our Stokers IN SERVICE on 78 Railroads

—“because the Promise has been Performed”

LOCOMOTIVE STOKER COMPANY

Main Office and Works: Pittsburgh, Pa.

50 Church Street
NEW YORK

Munsey Bldg.
WASHINGTON

Railway Exchange Bldg.
CHICAGO

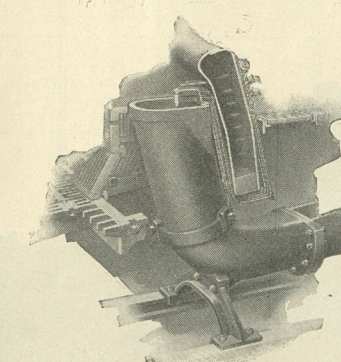
This record covers over one million locomotive miles fired by DUPONT-SIMPLEX TYPE “B” STOKERS in every class of service and averages 337,750 miles per detention.

In January, the most severe month of the year, DUPONT-SIMPLEX TYPE “B” STOKERS fired 434,000 miles without a single failure.

This remarkable stoker performance on locomotives in every part of the country emphasizes dependability of operation even under the most adverse conditions.

Standard Stoker Company, Inc.

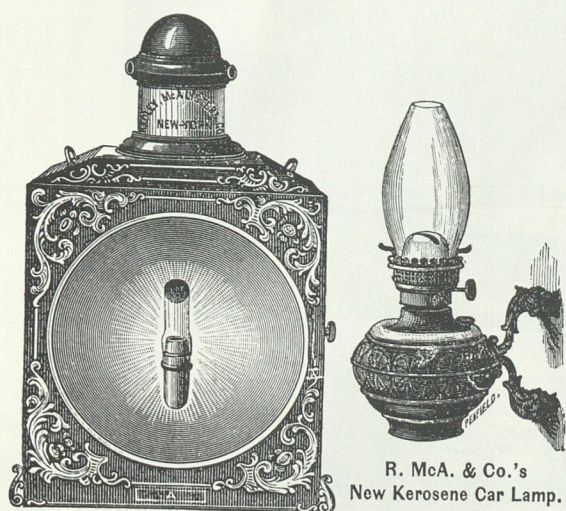
350 Madison Avenue, New York, N. Y.
McCormick Bldg., Chicago, Ill. duPont Bldg., Wilmington, Del.
Foundries and Works, Erie, Pennsylvania



In the DUPONT-SIMPLEX TYPE “B” STOKER, a single curved conduit replaces the entire coal elevating mechanism.

duPont-Simplex Type B Stoker

RADLEY, McALISTER & CO.,
No. 162 Greenwich Street, New York.
RAILROAD SUPPLIES
OF EVERY DESCRIPTION.
SOLE MANUFACTURERS OF RADLEY & HUNTER'S
SPARK ARRESTER.

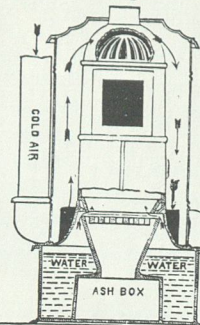


MANUFACTURERS OF LOCOMOTIVE COAL, KEROSENE
AND SPERM OIL HEAD LIGHTS, WITH
New Burners and Air Chambers.

By the air chambers, the burner, oil feeders, reservoir, chimney and
case are always kept perfectly cool, saving the oil from evaporation,
and effectually preventing the danger of taking fire or exploding.
STATION AND HAND LANTERNS, CAR LAMPS, AND EVERY KIND
OF CAR TRIMMINGS.

BISSELL SAFETY CAR STOVE, WITH WATER BASE.

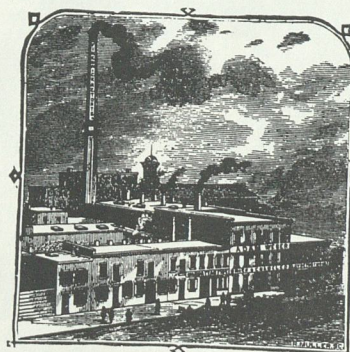
Fire Extinguished Instantly in case of Accident.



In use on following Railroads:
Pittsburgh, Ft. Wayne & Chicago Railway,
Pittsburgh, Cincinnati & St. Louis Railway,
Cleveland & Pittsburgh R. R.,
Pittsburgh & Lake Erie R. R.,
Franklin & Terre Haute R. R.
&c., &c.

BISSELL & CO.,
Office, 285 Liberty Street and 242 Penn Avenue,
PITTSBURGH, PA.
Works, Allegheny City, Pa.
(Sole Licensees under the Winslow Patents.)
Full Descriptive Circulars sent on
Application.

Manhattan Fire Brick & Enamelled Clay Retort Works



ADAM WEBER,
Proprietor,

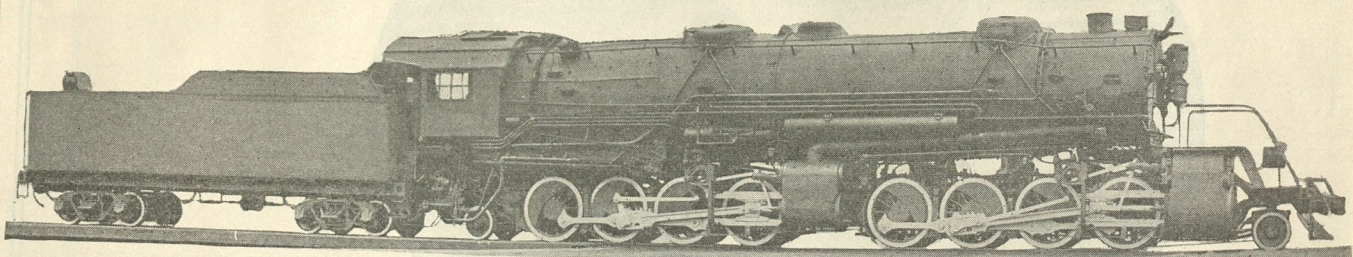
Office, 633 E. 15th St.,
NEW YORK,

Manufacturer of
Clay Retorts for Gas and Sugar Houses,
Fire Bricks, Blocks & Tiles

For
Furnaces, Rolling Mills, Gas Works,
Foundries, Lime Kilns, Glass
Works, etc.

Locomotive Arch Blocks,
BRICKS
Mackenzie & Other Cupolas,
ASSAY FURNACES AND
MUFFLES.

HUNT-SPILLER GUN IRON

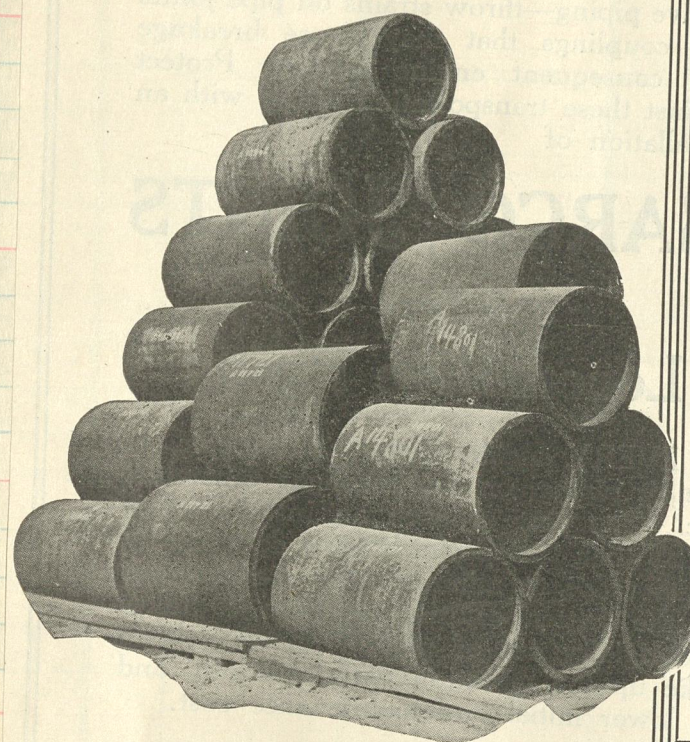


The Material Behind Locomotive Mileage

Continuous day in and day out operation makes your engines maximum producers—the fewer the hours that are required for roundhouse repairs, the more revenue hours on the road. Cut down the roundhouse “dead” time—make the effect of general shopping repairs last longer by using

Hunt-Spiller Gun Iron

for cylinder and valve bushings, packing rings, shoes and wedges, crosshead shoes, pistons, etc. Then roundhouse renewal of these parts is reduced to a point that effects a big economy of both time and expense. Investigate Hunt-Spiller and you will find 80% of the leading roads endorse our claims—let yours be the next.



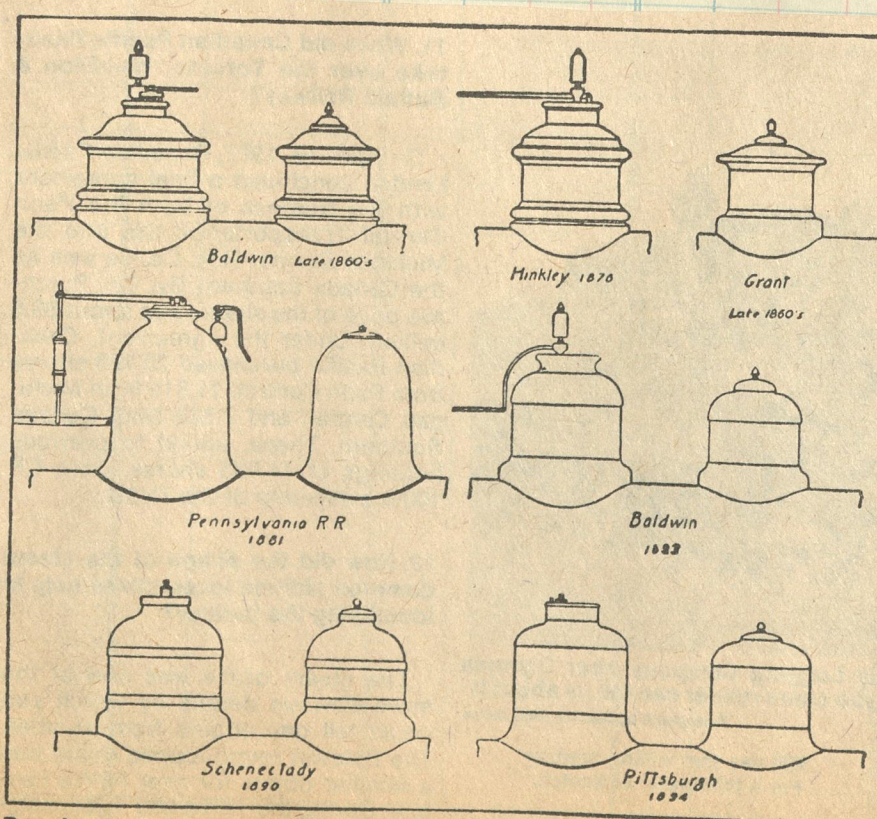
Made Only by

HUNT-SPILLER MFG. CORPORATION
W. B. Leach Pres. & Gen. Mgr.
J. G. Platt, Vice-Pres. & Sales Mgr.

Office and Works

383 Dorchester Ave

South Boston, 27, Mass.



Development of steam dome design in latter part of the nineteenth century.

Long Tangents

The longest stretch of straight track in the United States is between Wilmington and Hamlet, N. C., on the Seaboard Air Line Railroad. It is 78.86 miles in length. The Seaboard also has a 57.4-mile stretch of straight track between Okeechobee and West Palm Beach, Fla. Other tangents over 50 miles in length are:

Rock Island, between Guymon, Okla., and Dalhart, Tex., 71.94 miles.

New York Central, between Air Line Junction (west of Toledo, O.) and Butler, Ind., 68.49 miles.

Monon, between Brookston and Westville, Ind., 64.52 miles.

Illinois Central, between Edgewood and Akin Junction, Ill., 62.96 miles.

Atlantic Coast Line, between Waycross and Kinderhook, Ga., 60.1 miles.

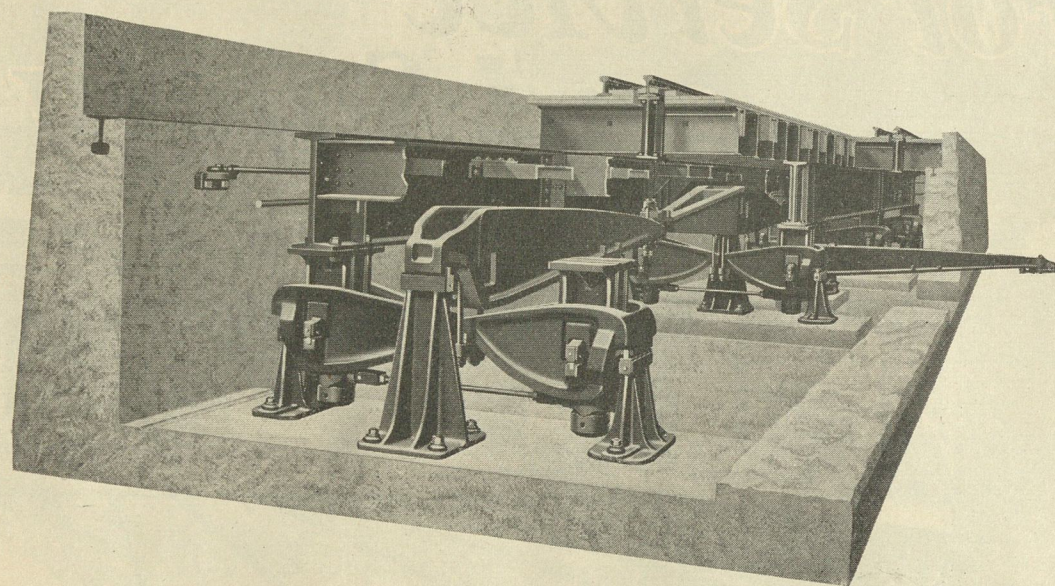
Chicago & North Western, between Vayland and Blunt, S. Dak., 53.85 miles.

Denver & Rio Grande Western, between Villa Grove and Alamosa, Colo., 52.82 miles through the heart of the Rockies.

Norfolk & Western, between Suffolk and Petersburg, Va., 52.12 miles.

Northern Pacific, between Fargo and Peak, N. Dak., 51.2 miles.

Southern Pacific, between Tagus and Slater, Calif., 50 miles.



This is the construction actual service conditions dictated

In the Fairbanks Type “S” Railroad Track Scale, massive levers of the double-web type—center-loading—insure transmission of *all* the load without losses due to lever distortion. Pivots and bearings are held firmly in recesses machined in the levers. Machined surfaces at all points of contact between suspension bearing elements give flexible suspension that allows all parts of the scale to return to normal position by gravity. These and other features representative of construction built on basically correct principles—designed, tested and proved under actual service conditions—contribute to the sustained accuracy, long life and ease of maintenance for which the Type “S” Scale is known from Alaska to Chile.

Let us send you Bulletin 130B completely describing this scale.

FAIRBANKS SCALES

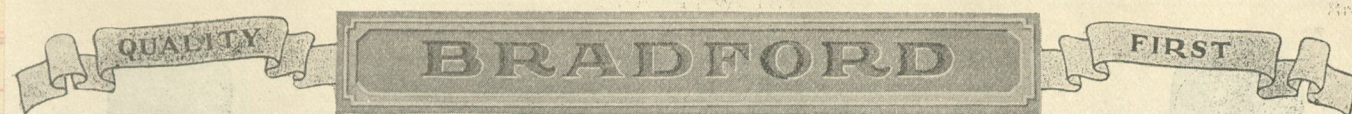
New York
Broome and Lafayette Sts.

Preferred the World Over

Chicago
900 S. Wabash Ave.

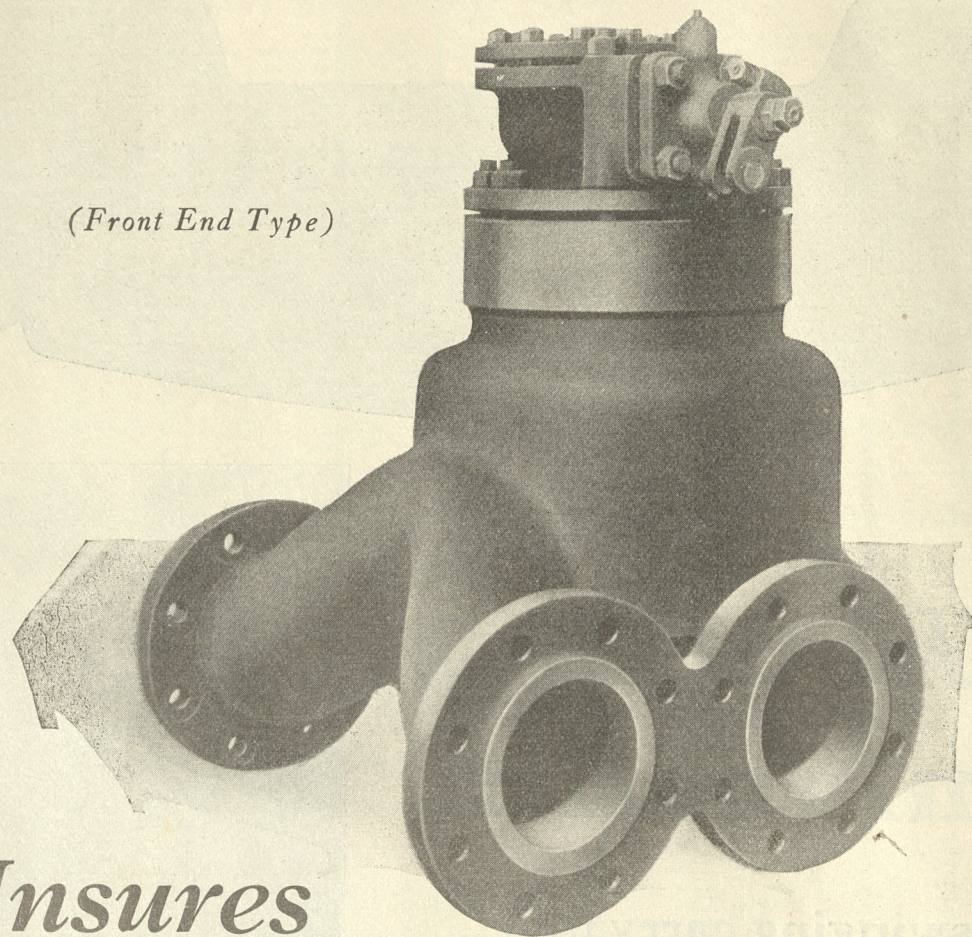
And 40 other principal cities in the United States

“A Service Station at Each House”



Chambers Throttle Valve

(Front End Type)



Insures

More Perfect Control

THE superheat locomotive equipped with a Chambers Front End Throttle Valve instantly responds to every movement of the throttle.

This assures the engineer perfect control over his engine and eliminates that hazardous "feel" method which has to be employed with a throttle valve located in the dome.

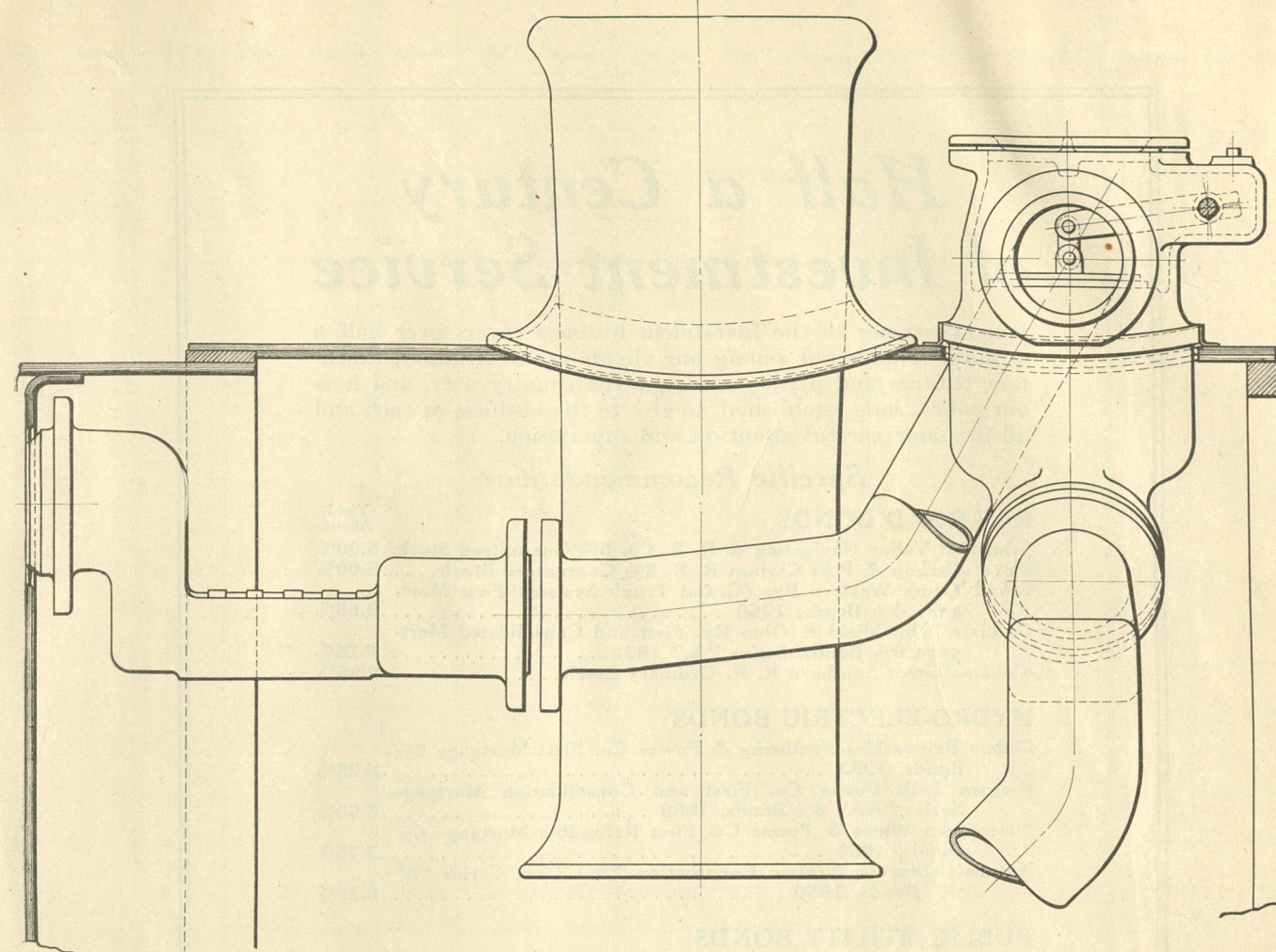
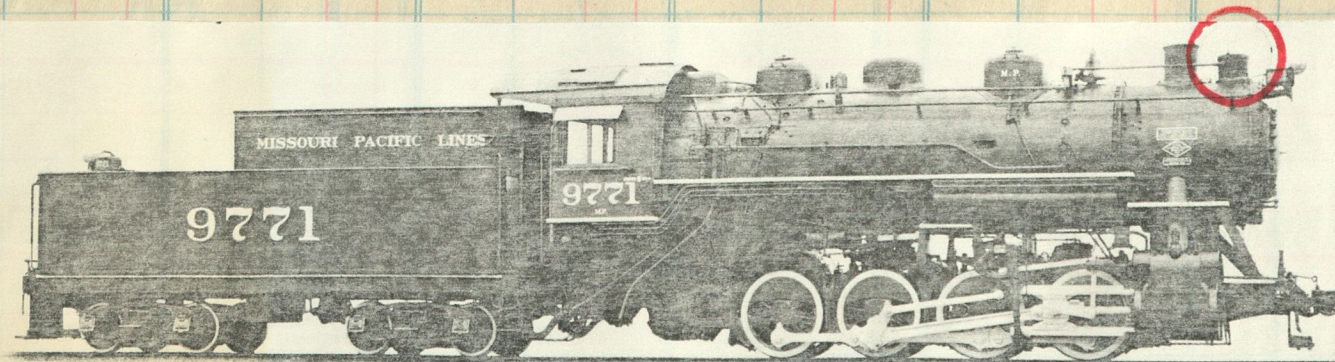
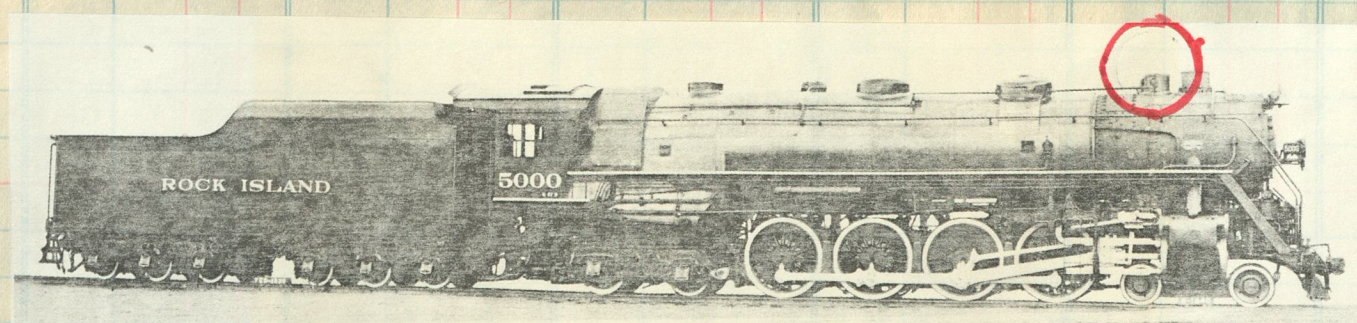
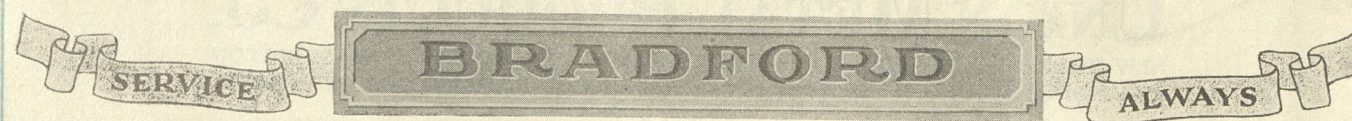
The Chambers Throttle Valve has a perfect balance which makes it extremely easy to operate—The single seated main valve is always tight and does not require regrinding.

As for maintenance, let us show you some performance records of worthwhile savings.

THE BRADFORD CORPORATION

NEW YORK
25 West Forty-third St.

CHICAGO
Railway Exchange



CHAMBERS "Superheated Steam" THROTTLE

Front End Application (Type "A" Superheater)

THIS Valve is so constructed that distortions due to the high temperatures involved, do not affect it; and is so designed that all internal parts can be removed, renewed, or valves re-ground, from the outside, without killing the engine.

It can be applied to most old power and all new power, and attached to various types of Superheaters.

Bradford Draft Gear Company

New York—23 West 43rd Street,
Chicago—McCormick Building,

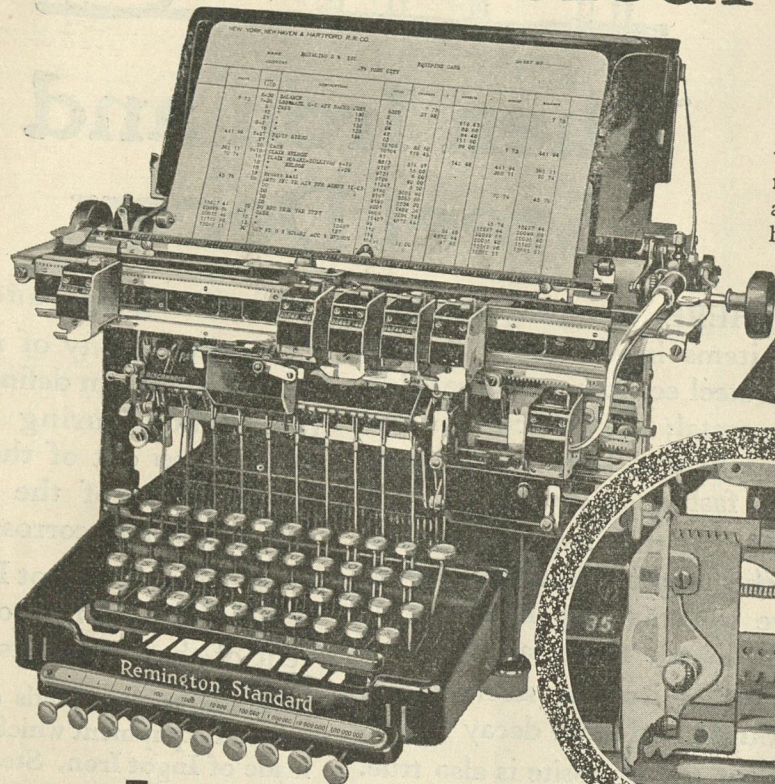
Washington—Munsey Building,
Atlanta—Candler Building,

Montreal—The Holden Company, Ltd.

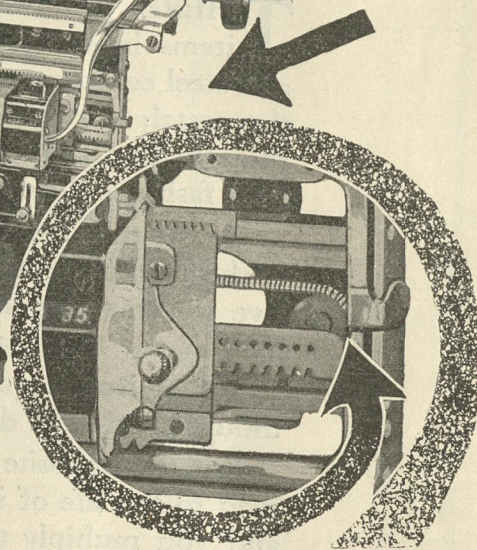
The front end throttle is simply a throttle located in the front end or smoke box of a locomotive, rather than in the steam dome. Some are placed entirely within the front end; others are in a housing which sticks up either ahead of or behind the smoke stack. You can tell front-end throttles easily by noting the throttle lever along the engineer's side of the boiler.

Against Errors

The Automatic Lock Proof of Clearance

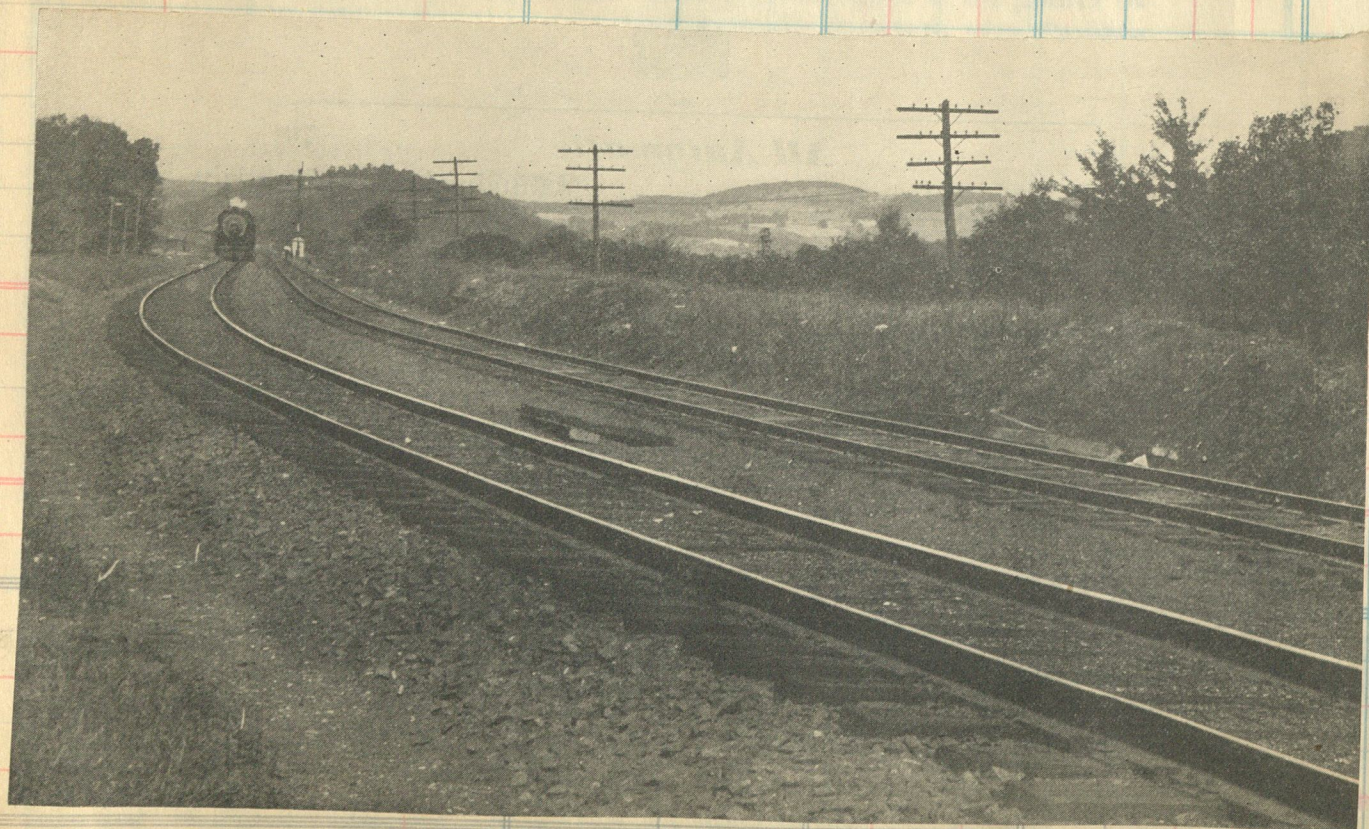


Write for our illustrated "Something New—and Better." It tells all about the new Remington Automatic Lock Proof of Clearance—what it does and how it operates.



on the REMINGTON Railroad Accounting Machine

for Railroad Accounting, Bookkeeping and Statistical Work in All its Branches.



KREOLITE FLOORS
"Outlast the Factory"
An excellent investment for freight houses and platforms, engine houses, machine shops, etc. Write to-day for our booklet—Factory Floors
THE JENNISON-WRIGHT COMPANY
Crosstons, Cross Ties and Timbers.
65 Kreolite Bldg., Toledo, Ohio

FALLS HOLLOW STAYBOLTS
FALLS SOLID STAYBOLTS
represent down-to-the-minute perfection. Used many years by most of the railroads. New improvements ensure round hole. Cleanest, most refined, hence most ductile and reliable iron produced in America.
SOLID WALL CAN'T SPLIT. Long bars or stays.
FALLS HOLLOW STAYBOLT CO.
Cuyahoga Falls, Ohio

MUDGE TRAILERS · PUSH CARS
PRESSED STEEL WHEELS
MOTOR SPARK ARRESTERS
CARS
MUDGE & COMPANY
Manufacturers—Railroad Equipment
Railway Exchange Bldg.—Chicago

WALKER DRAFT GEAR CORP.
EDMUND H. WALKER, President
233 Broadway
New York
FRICTION DRAFT GEARS

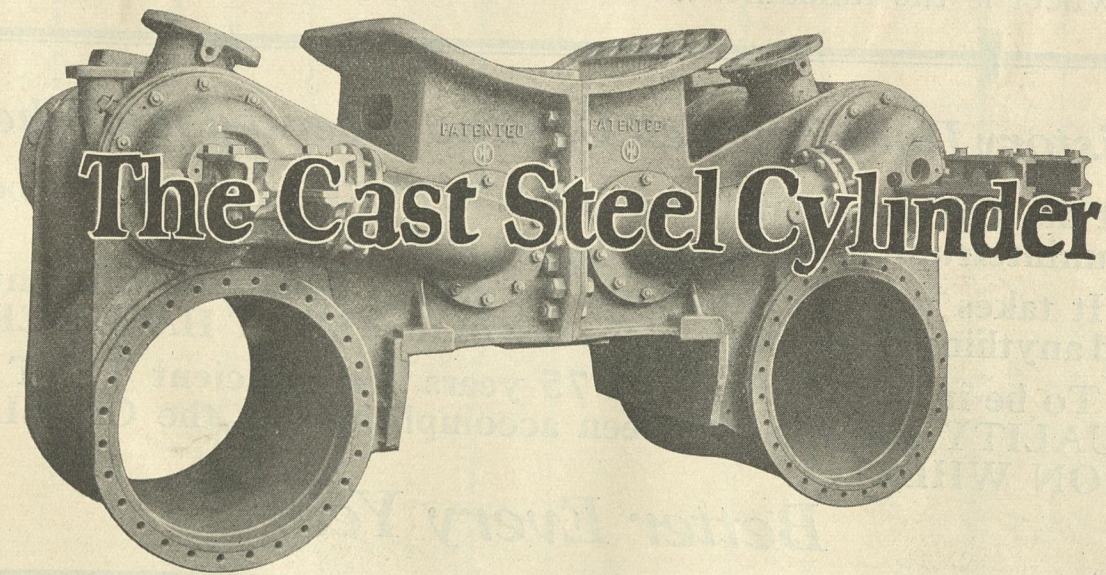
"DIETER NUTS"
STANDARD SAFETY
NUT CORPORATION
30 Church St. New York N. Y.

ROLLED MANGANESE STEEL RAIL
Furnished in all standard sections
MANGANESE STEEL RAIL COMPANY
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Anti-Friction Car Supporting Means
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Ill. Merchants Bank Bldg. CHICAGO

Hayward Buckets
"Dig for all the World"
THE HAYWARD COMPANY
46 Dey Street, New York, N.Y.

Consider--



BOILER pressures are on the increase, yet every possible pound is being cut from locomotive weight.

To meet the higher steam pressures cast iron cylinders would have to be made heavier but this cannot be tolerated.

The solution lies in the cast steel cylinder.

Within the last two years Ohio has produced scores of cast steel cylinders for many different roads.

From 2 to 5 tons of dead weight has been eliminated from the locomotive weight and a more dependable cylinder has resulted.

On your new power specify steel cylinders, cast by The Ohio Steel Foundry Company, the pioneers in this development.

The Ohio Steel Foundry Company

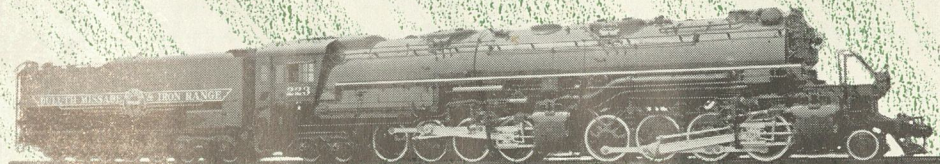
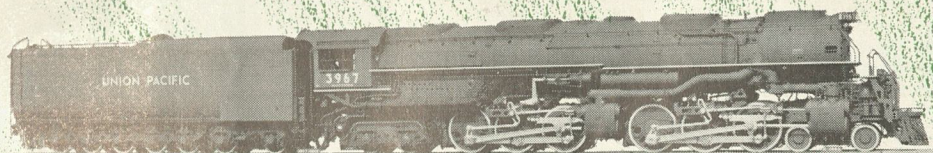
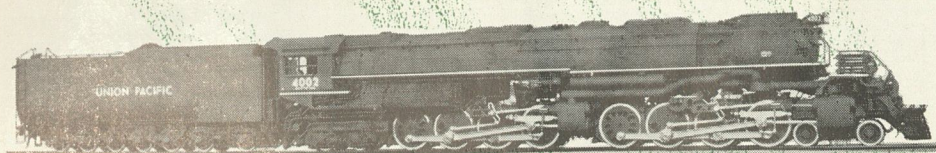
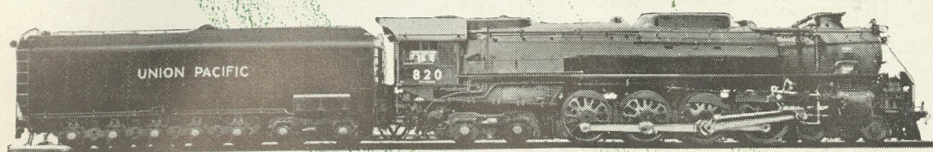
Lima, Ohio

Plants at Lima and Springfield, Ohio
Pioneers in the Production of Cast Steel Cylinders

Locomotive Main Frames
High Test Vanadium
Vanadium and Carbon Steel
Bolsters and
Truck Side Frames
Locomotive
Castings
of all kinds

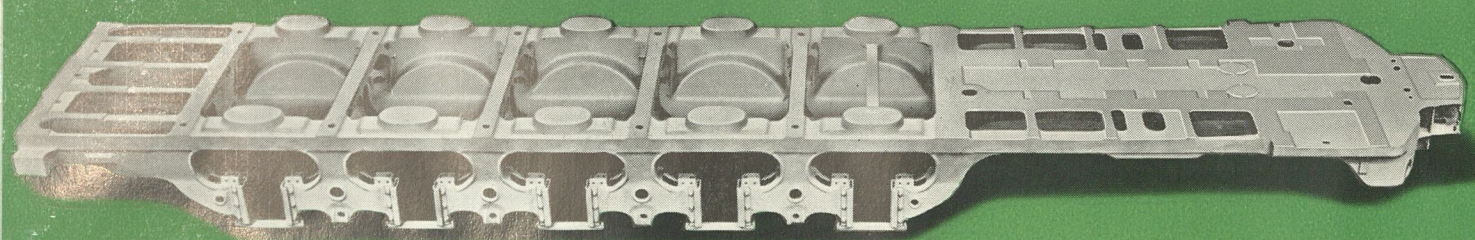
TO DO A BIG JOB BETTER-

MORE AND MORE
RAILROADS ARE USING THIS



HIGH powered locomotives, longer runs and faster schedules make large capacity tenders essential—if revenue mileage is to be increased and the number of stops and delays reduced.

This new Tender arrangement with the COMMONWEALTH TENDER BED permits increased water and fuel capacity while keeping tender tanks within the clearance restrictions of right-of-way and terminals...weight of Tender is reduced...wheel loads are kept within



One-Piece Tender Bed

GENERAL STEEL

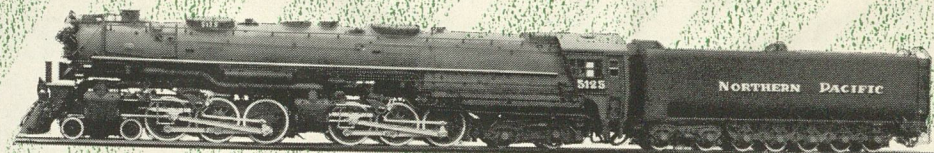
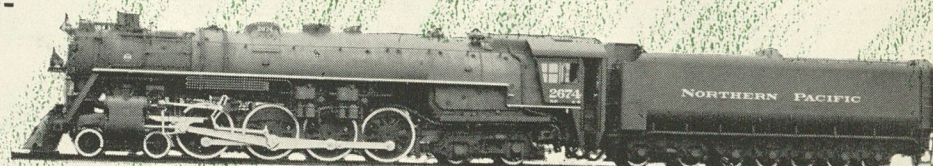
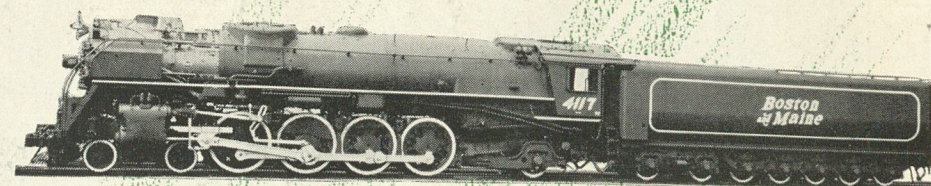
NEW TYPE TENDER

1942 13

recommended practice...track stresses are reduced...increased mileage is obtained between wheel turnings.

After several years of intensive service, comparisons prove that operating and maintenance costs are reduced and locomotive availability increased.

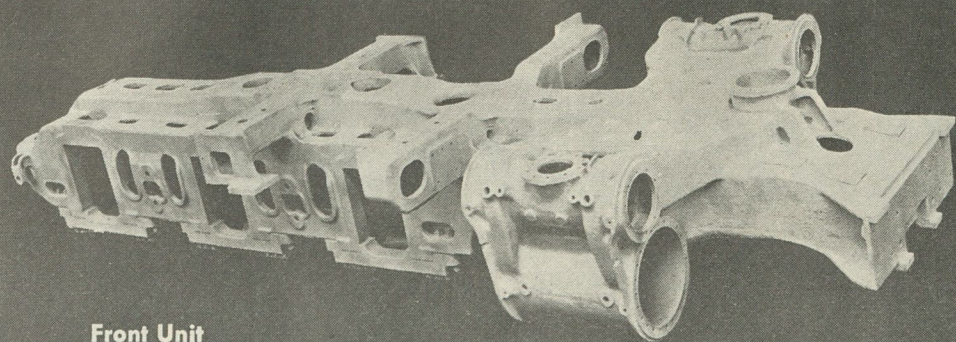
In service—or on order
for these railroads
UNION PACIFIC
BOSTON & MAINE
D. M. & I. R.
NORTHERN PACIFIC
D. & R. G. W.
NEW YORK CENTRAL



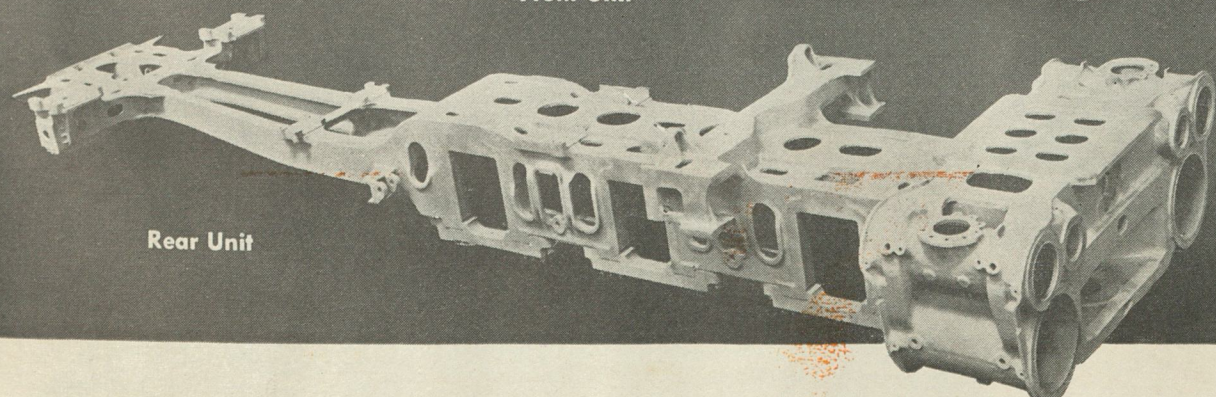
CASTINGS

EDDYSTONE, PA.
GRANITE CITY, ILL.

One-Piece Cast Steel
Locomotive Beds—
Northern Pacific 4-6-6-4's



Front Unit

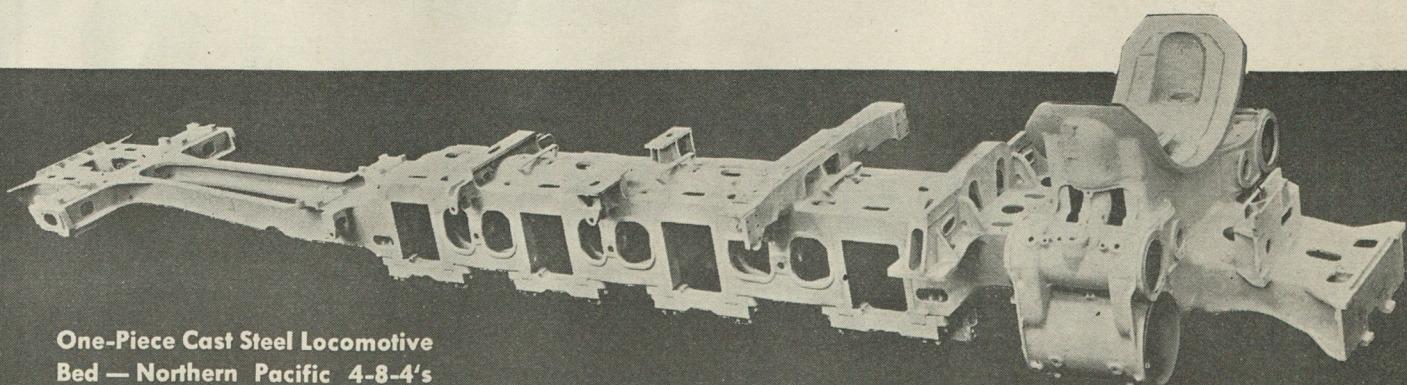


Rear Unit

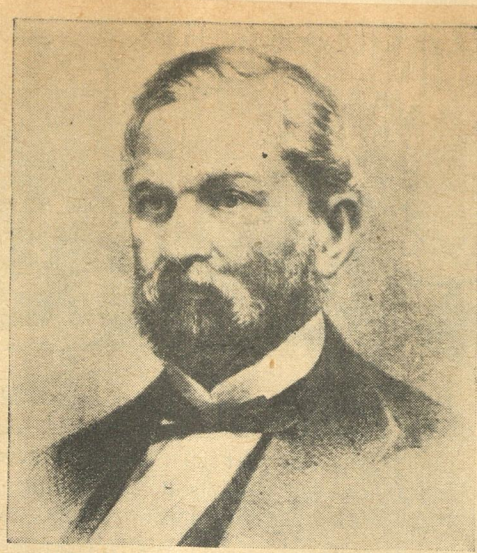
GENERAL STEEL CASTINGS

Eddystone, Pa.

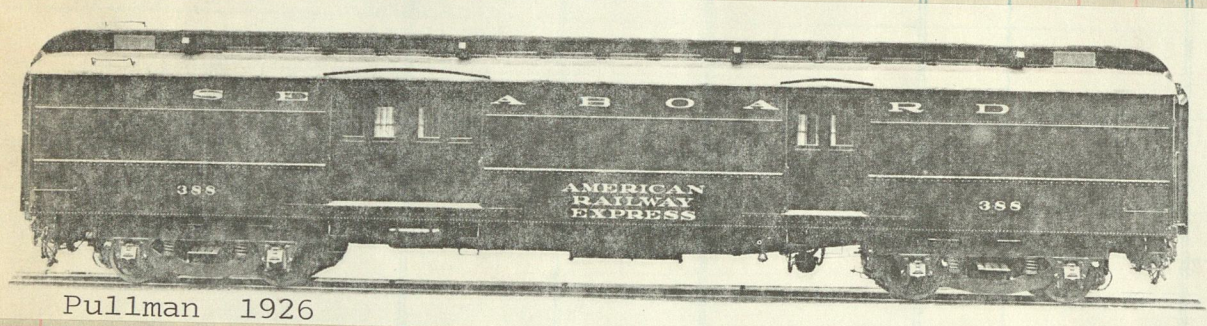
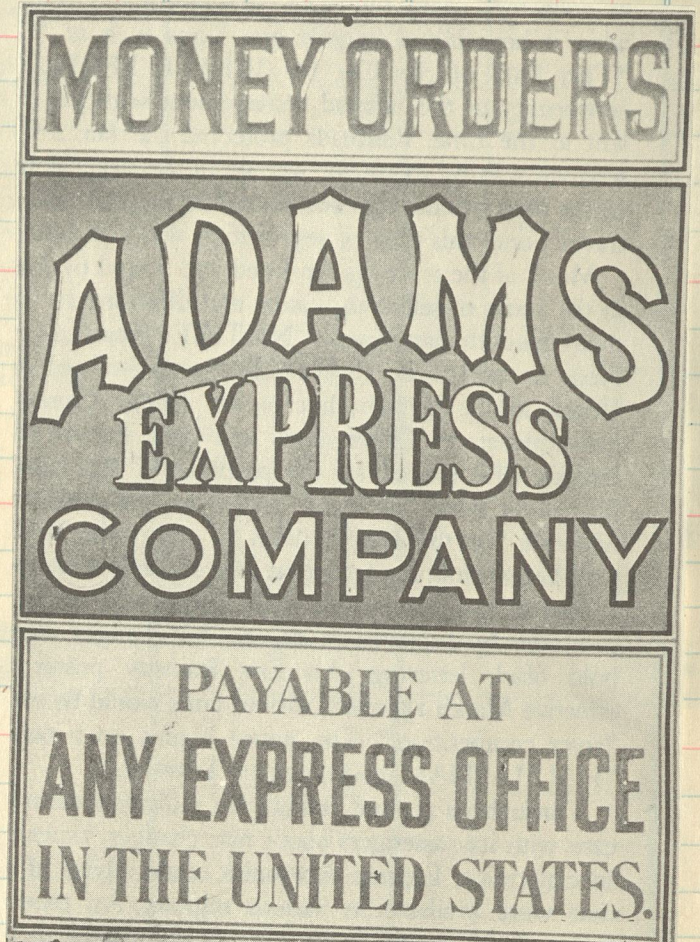
Granite City, Ill.



One-Piece Cast Steel Locomotive
Bed — Northern Pacific 4-8-4's



William G. Fargo, partner of former Harnden agent, Henry Wells, who created a New York-Albany-Boston triangle against which rival eastern companies couldn't compete. When Wells left Harnden to create Pomeroy & Co., former Auburn & Syracuse railroader Fargo became his agent, then partner in a concern devoted to expansion of service westward



WELLS FARGO & CO EXPRESS
operates on the Denver & Rio Grande system. Express service from Ocean to Ocean and from the Lakes to the Gulf. Express service is safe, speedy and sure.

Travelers' Checks. A safe and convenient method of carrying funds. These checks are payable at express offices, banks, hotels, transportation companies and merchants in all parts of the world without discount or commission.

Locomotive Whistles

By JOSEPH R. ELTON*

The locomotive whistles,
They are music to my ear;
Different tones of their whistles
Are what I like to hear.

Now a sailor loves the ocean,
And a railroad man the rail,
Each man to his notion,
Both know a whistle's hail.

The coarse voice of the steamship
As she slips out to sea
Music to those of seamanship
But 'tis not so for me.

If you be born of the railroad,
If you be true railroad men,
The whistles of the steel road
Will be the ones you ken.

The locomotive whistles
Be the weather foul or fair
Will be to you as music
Floating on the air.

Now the organ-like tones of the Wabash
As she rolls o'er the river bridge
Makes echoes, and more echoes
As she goes on over the ridge.

Whistling, whistling up the line
With her deep-throated organ chime,
Side-rods clanking, exhaust in rime,
Music to this railroad heart of mine.

Burlington, Rock Island, Milwaukee,
No matter what railroad it be,
If their locomotives I cannot see,
Their whistles make music, music for me.

Music for those who have ever been
Sometime or other true railroad men,
Whistling locomotives on the line
To railroaders, sure sounds mighty fine.

*This poem was written by JOSEPH R. ELTON of Eldon, Iowa, a former railroader.

400. What was the origin of railway express service in America?

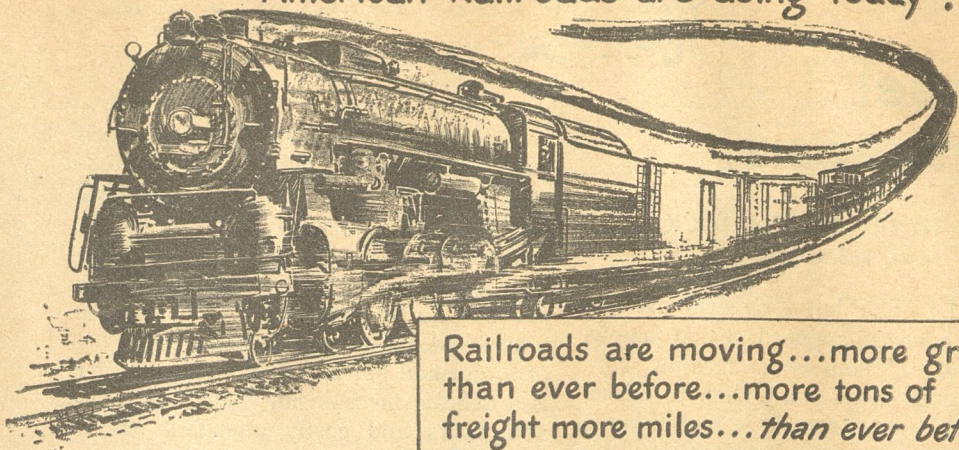
William F. Harnden, pioneer passenger train conductor, after a few years in the service of the Boston & Worcester Railroad (now a part of the New York Central) conceived the idea of becoming a messenger for banking houses, merchants and other business interests in New York and Boston. He entered into a contract with the Boston & Providence Railroad (now the New York, New Haven & Hartford) and a steamship plying between New York and Providence, to carry on his messenger business over their lines. Starting on March 4, 1839, with a large carpet-bag, Harnden, the world's first express messenger, traveled regularly between New York and Boston. His business grew rapidly; a special package car was placed in service; offices were opened in New York and Boston; assistants were employed; the service was extended to Philadelphia and other cities, until Harnden & Company became an international institution. In the meantime, many competitive enterprises were started. Harnden died in 1845, but the express business which he founded grew with the development of the railroads and the country.



Believe It or Not! by Ripley

A MILLION TONS ONE MILE
EVERY MINUTE!

That's the size of the job
American Railroads are doing today!



Railroads are moving...more grain
than ever before...more tons of
freight more miles...than ever before
in peacetime... AND EVEN BREAKING
SOME OF THEIR WARTIME FREIGHT RECORDS!

Your railroads are moving an almost unbelievable amount of freight across the nation. In the first four months of this year they topped even their wartime carloading records! And more tons of freight are moving more miles than ever before in peacetime!

Railroads are carrying this greater tonnage with fewer cars. Although thousands of new cars have been put in service, and 100,000 are still on order, they are not coming fast enough to replace those worn out in wartime.

This record-breaking volume of freight is being hauled at charges which average just a little more than one cent for carrying a ton of freight one mile. This is less than 15% above 1939 levels.

But railroad wages are more than 50% higher than they were in 1939. Fuel and material costs are 60% higher than before the war.

As a result, in this year of biggest peacetime business, railroads are earning an average return on their net investment of only about 3%.

That's just about half the earnings the railroads need if they are to keep on making the improvements in cars and engines, tracks and terminals, signals and shops, which will keep freight moving at a rate to meet the nation's needs...to bring better service to you!

Send for a free copy of the new booklet, "You and Your Railroads," Association of American Railroads, Room 949, Transportation Building, Washington 6, D. C.

AMERICAN RAILROADS
THE NATION'S BASIC TRANSPORTATION



Whistles

Whistle signals

The signals prescribed are illustrated by "o" for short sounds; "—" for longer sounds. This is Rule 14 from the A. A. R. standard code.

- o Apply brakes. Stop.
- Release brakes. Proceed.
- o o o Flagman protect rear of train.
- — — Flagman may return from west or south.
- — — — Flagman may return from east or north.
- o o Answer to any signal not otherwise provided for.
- o o When standing, back; when running, stop at next station.
- o o o Call for signals.
- o o (Single track.) To call attention of engine and train crews of trains of the same class, inferior trains and yard engines, and of trains at train-order meeting points, to signals displayed for a following section. If not answered by a train, the train displaying signals must stop and ascertain the cause.
- o o (Two or more tracks.) To call attention of engine and train crews of trains of the same class and of inferior trains moving in the same direction and of yard engines, to signals displayed for a following section.
- o — Approaching public crossings at grade. To be prolonged or repeated until crossing is reached.
- (very long) Approaching stations, junctions, railroad crossings at grade and where otherwise required.
- o Approaching meeting or waiting points. (To be sounded one mile before meeting or waiting point.)

- o — Inspect train line for leak or for brakes sticking.
- o o o o o Alarm for persons or live stock on track. (This is a succession of short blasts, no given number of signals.)
- o When running against the current of traffic: (1) Approaching stations, curves, or other points where view may be obstructed. (2) Approaching passenger or freight trains and when passing freight trains. (3) Preceding the flagman recall signals.
- — — — o Flagman may return from east or north on — track.
- — — — o Flagman may return from west or south on — track.
- — — — o o Flagman may return from east or north on — track.
- — — — o o Flagman may return from west or south on — track.
- — — — o o o Flagman may return from east or north on — track.
- — — — o o o Flagman may return from west or south on — track.

§ As prescribed by Rule 99.

Communicating Signals.

- o o When standing, start.
- o o When running, stop at once.
- o o o When standing, back.
- o o o When running, stop at next passenger station.
- o o o o When standing, apply or release air brakes.
- o o o o When running, reduce speed.
- o o o o When standing, recall flagman.
- o o o o o When running, increase speed.
- o o o o o When running, increase train heat.
- o — o Shut off train heat.
- When running, brakes sticking; look back for hand signals.

Place Special Service Pastors Here

787-TAVARES & GULF RAILROAD CO.—787

Form T & G-104
10M Sets 7-51

PERISHABLE FREIGHT WAYBILL

DUPLICATE

STOP this car at Denver, Colorado for partial unloading by H. A. Moore		Weight in Tons Gross 150075 Net 12410		Length of Car Ordered 435 Furnished 435		Marked Capacity of Car Ordered 435 Furnished 435		Stenciled Weight of Car	
For Grocery Co., 3001 Broadway		Carload Transferred to		Date OCT 17 1955		Waybill No. INT-2143			
Car Initials and Number FGEX 364				To San Cienega, California		From WINTER GARDEN, FLA.			
Route (Show each Junction and Carrier in Route Order to Waybilled Destination.) T & G--Tavarez--SAL--Vidalia MD&S CoFGA NC&STL CB&Q UP PE		Show "A" if Agent's Routing or "S" if Shipper's Routing		No. 435		Full Name of Shipper WINTER GARDEN CITRUS PROD. CO-OP.			
Consignee, Address Winter Garden Citrus Products Cooperative c/o Jerseymaid Milk Products Co., 3229 11th Ave.		Final Destination and Additional Routing		Origin and Date, Original Car, Transfer Freight Bill and Previous Waybill Reference and Routing when Rebilled					

PLACE ALL RECONSIGNED INFORMATION AND MISCELLANEOUS CHARGES ACCRUING IN TRANSIT IN SPACES PROVIDED AND IN THE ORDER THEY OCCUR

(1) Reconsigned to	At	Authority
Route	Car Arrived	Placed for Delivery
Consignee	Notice of Arrival	Disposition Order or
(2) Reconsigned to	Given	Disposition Furnished
Route	At	Authority
Consignee	Car Arrived	Placed for Delivery
(3) Reconsigned to	Notice of Arrival	Disposition Order or
Route	Given	Disposition Furnished
Consignee	At	Authority
(4) Reconsigned to	Car Arrived	Placed for Delivery
Route	Notice of Arrival	Disposition Order or
Consignee	Given	Disposition Furnished

At	Condition of Car
Gross	Time Car Ordered 9am Date 10/17 Hour
Tare	Time Car Placed 9am Date 10/17 Hour
Allowance	Time Car Released 6pm Date 10/17 Hour
Net	Time Bill of Lading Signed 6pm Date 10/17 Hour
Instructions (Regarding Icing, Ventilation, Heating, Milling, Weighing, etc. If Iced, Specify to Whom Icing Should be Charged)	

MECHANICAL REFRIGERATION AS PER
RULE 171, PROTECTIVE TARIFF #15

Description of Articles and Marks	Commodity No.	Weight	Rate	Freight	Advances	Prepaid
4730 es. 48/6oz. FROZ.ORG.CONCENTRATE		150075	180	2341.55		
			12410	153.09		
		Refrigeration		183.39 due T&G		
				2695.82		
				S/O chg.		2695.82
						13.00
						2708.82

Certificate as required by Florida law on file with T & G Agent, Winter Garden, Fla.

SHIPPERS LOAD AND COUNT--WITHOUT RECOURSE

★ MISCELLANEOUS CHARGES ACCRUING IN TRANSIT AND AT DESTINATION						
Road	Station	Waybill No.	Date	Class of Service	Weight	Charges

*When Unable to Show Advances Only Waybill Number Enter All Other Information Called for. Place All Stamps and Notations Not Arranged for on Back of Waybill in Spaces Provided.

787-TAVARES & GULF RAILROAD CO.

431. When was the locomotive whistle introduced?

The first locomotive equipped with a whistle is said to have been the "Sandusky," which was built in Paterson, N. J., and made its first run on what is now the New York Central Railroad out of Sandusky, Ohio, in 1837.

SELLER
DATE
FORM DESTINATION Am

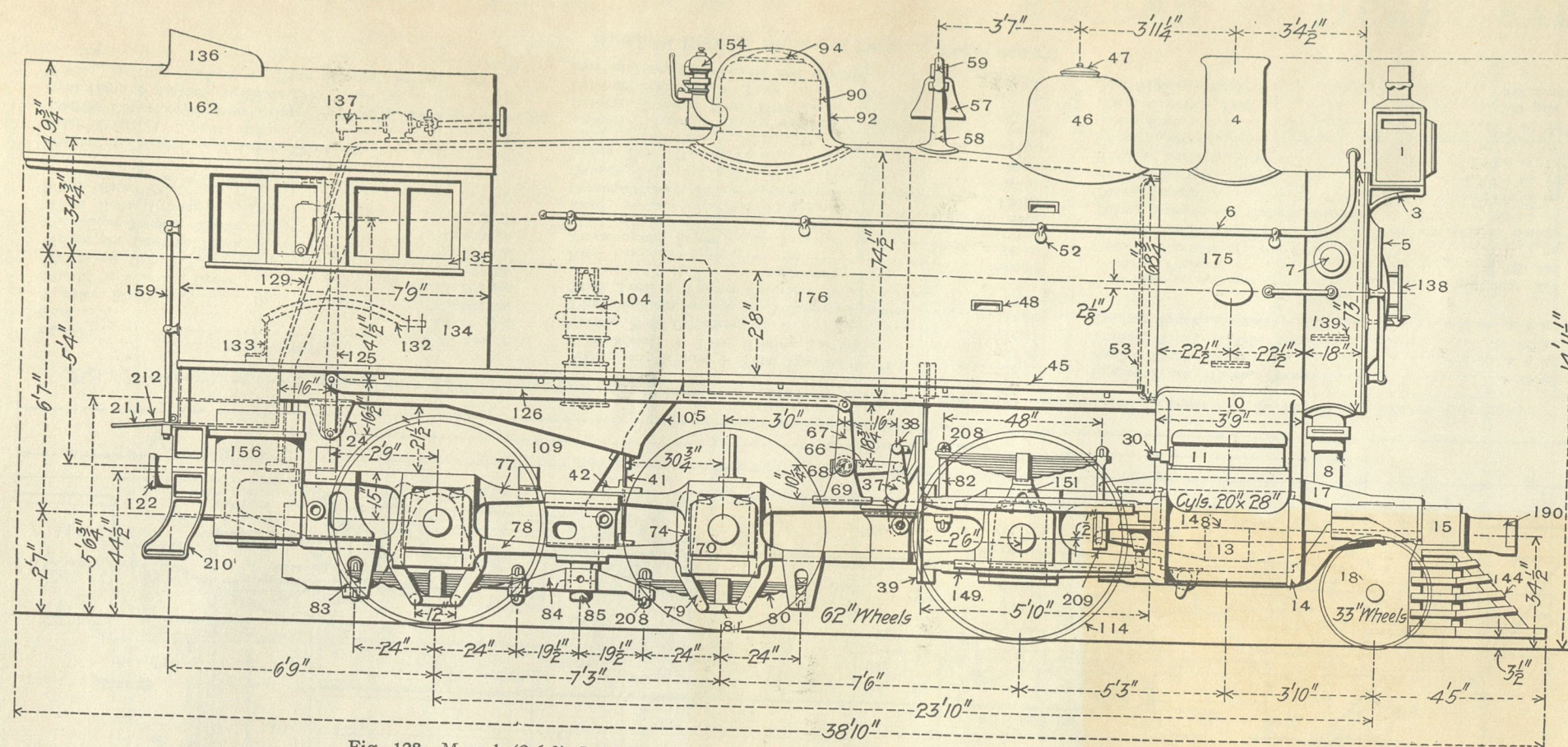


Fig. 128—Mogul (2-6-0) Locomotive for Freight Service. Built by the Pennsylvania Railroad.

209

LOCOMOTIVES; 2-6-0 Type, General Draw

Jos. No. Sold Amount Clos. No. Sold Amount

LOCOMOTIVES; Names of Parts.

200

Names of Parts of Locomotives.

- | | | |
|--|--|---|
| 1 Headlight | 56 Boiler Jacket | 107 Driver and Trailing Truck Equalizer |
| 2 Headlight Dynamo and Turbine | 57 Bell | 108 Driver and Trailing Truck Equalizer Bracket |
| 3 Headlight Bracket | 58 Bell Stand | 109 Ashpan |
| 4 Smoke Stack | 59 Bell Yoke | 110 Ashpan Hopper |
| 5 Smokebox Front | 60 Driver Brake Cylinder | 111 Ashpan Hopper Slide |
| 6 Handrail | 61 Transmission Bar | 112 Ashpan Hopper Slide Hanger |
| 7 Smokebox Cleaning Hole Cover | 62 Transmission Bar Hanger | 113 Ashpan Hopper Slide Arm |
| 8 Cinder Valve and Pipe or Chute | 64 Link | 114 Driving Wheel |
| 9 Steam Pipe | 65 Link Hanger | 115 Trailing Truck Wheel |
| 10 Cylinder Saddle | 66 Reverse Shaft Arm | 116 Trailing Truck Journal Box |
| 11 Steam Chest or Valve Chamber | 67 Reverse Shaft Lever | 117 Trailing Truck Pedestal |
| 12 Steam Chest Head or Cover | 68 Reverse, Tumbling or Lifting Shaft | 118 Trailing Truck Spring |
| 13 Cylinder | 69 Reverse Shaft Bearing | 119 Trailing Truck Spring Hanger |
| 14 Cylinder Head Casing | 70 Driving Box | 120 Trailing Truck Spring Hanger Bracket |
| 15 Bumper | 71 Driving Box Brass | 121 Rear Frame |
| 16 Bumper Channel | 72 Driving Axle | 122 Tail Piece |
| 17 Front Frame | 73 Driving Box Cellar | 123 Chafing Plate or Block |
| 18 Front Truck Wheel | 74 Frame Pedestal | 124 Reverse Lever Bracket |
| 19 Front Truck Frame | 75 Pedestal Brace or Binder | 125 Reverse Lever |
| 20 Front Truck Pedestal | 76 Frame Brace or Filling | 126 Reach Rod |
| 21 Front Truck Journal Box | 77 Top Frame Rail | 127 Crownsheet |
| 23 Front Truck Axle | 78 Bottom Frame Rail | 128 Doorsheet or Backsheet of Fire-box |
| 24 Front Truck Pedestal Tie Bar | 79 Driving Spring Hanger Stirrup | 129 Backhead of Boiler |
| 25 Front Truck Frame Cross Tie | 80 Driving Spring | 130 Firedoor Opening |
| 26 Front Truck Equalizer | 81 Driving Spring Seat | 131 Foot Board |
| 27 Front Truck Spring | 82 Driving Spring Hanger | 132 Reverse Lever Quadrant |
| 28 Front Truck Spring Hanger | 83 Driving Spring Hanger Bracket | 133 Reverse Lever Quadrant Bracket |
| 30 Valve Stem | 84 Driver Equalizer | 134 Cab |
| 31 Valve Rod | 85 Driver Equalizer Bracket, Post or Fulcrum | 135 Cab Window Sash |
| 32 Valve Stem Gland | 87 Reverse Shaft Counterbalance Spring Rod | 136 Cab Ventilator |
| 33 Valve Rod Pin | 88 Reverse Shaft Counterbalance Spring Case | 137 Turret, Fountain or Combination Stand |
| 34 Piston Rod | 89 Dry Pipe Hanger | 138 Number Plate |
| 35 Crosshead | 90 Dome | 139 Headlight Step |
| 36 Crosshead Shoe or Gib | 91 Dome Lagging | 140 Smokebox Cleaning Hole |
| 37 Rocker | 92 Dome Casing | 141 Steam Chest Relief Valve |
| 38 Rocker Pin | 93 Dome Casing Cap | 142 Low Pressure Cylinder |
| 39 Guide Yoke | 94 Dome Cover or Lid | 143 High Pressure Cylinder |
| 40 Guide Yoke Knee or Angle | 95 Throttle Stand Pipe | 144 Pilot |
| 41 Waist Sheet or Buckle Plate | 96 Throttle Valve Casing | 145 Bumper Brace |
| 42 Waist Sheet Angle | 97 Throttle Valve | 146 Pilot Bracket |
| 43 Cylinder Cock Bell Crank | 98 Throttle Valve Stem | 147 Front Truck Radius Bar |
| 45 Running Board | 99 Throttle Bell Crank | 148 Front Driver and Truck Equalizer |
| 46 Sandbox | 100 Turret Dry Pipe | 149 Guide |
| 47 Sandbox Cap | 102 Safety Valve or Auxilliary Dome | 150 Manhole Cover |
| 48 Sandbox Step | 103 Back Tube Sheet | 151 Driving Box Saddle |
| 49 Boiler Check Valve | 104 Air Pump or Compressor | 152 Driving Box Yoke |
| 50 Injector Delivery or Boiler Feed Pipe | 105 Throat Sheet | |
| 51 Injector Delivery Pipe Bracket | 106 Washout Plug Hole | |
| 52 Hand Rail Post or Bracket | | |
| 53 Front Tube Sheet | | |
| 54 Dry Pipe | | |
| 55 Boiler Lagging | | |

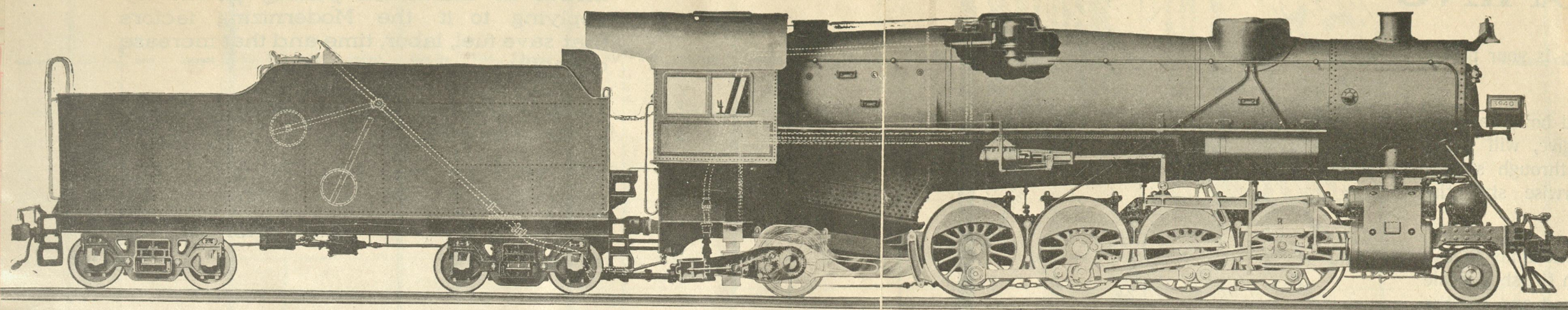
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LOCOMOTIVES; Names of Parts.

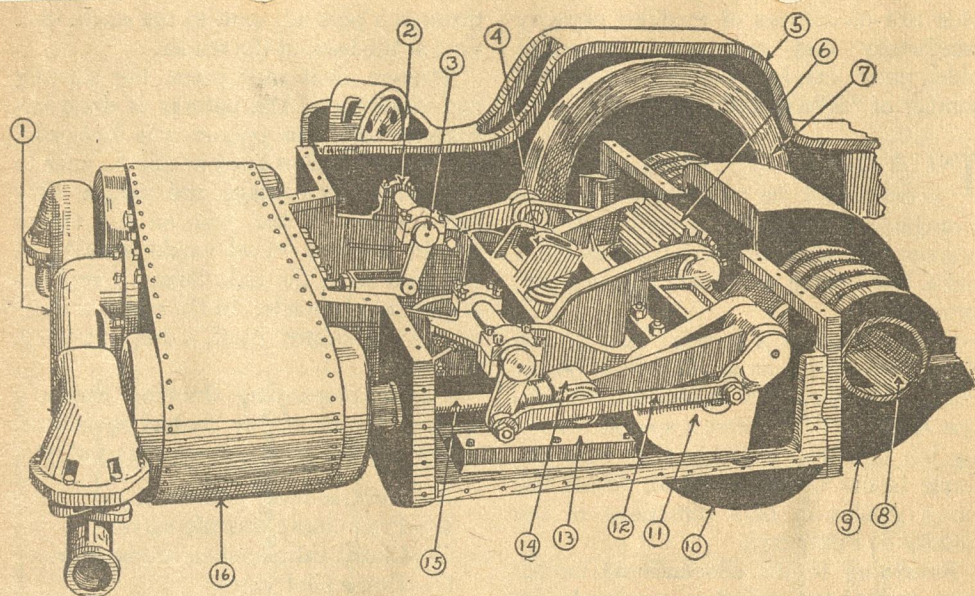
Names of Parts of Locomotives (continued).

- | | | |
|---|--|--|
| 153 Safety Valve | 210 Engine Step or Cab Step | 277 Tool Box |
| 154 Whistle | 211 Cab Apron | 278 Valve Rod Guide |
| 155 Intermediate Driving Spring | 212 Cab Apron Hinge | 279 Valve Rod Crosshead |
| 156 Main Air Reservoir or Drum | 213 Tee Head or Nigger Head | 280 Tank Equalizing Pipe |
| 157 Expansion Bracket or Pad | 216 Front Truck Box Yoke | 281 Reverse Screw |
| 158 Ashpan Slide Connection | 217 Front Truck Pivot Pin or Center Pin | 282 Reverse Screw Wheel |
| 159 Cab Hand Hold | 218 Front Truck Center Casting or Bumper Casting | 283 Reverse Screw Support |
| 160 Steam Gage Plate or Stand | 219 Driving Box Shoe | 284 Lubricator Dry Pipe |
| 161 Cab Window Opening | 220 Equalizer Safety Strap | 285 Grate Shaft |
| 162 Cab Roof | 222 Foot Plate or Deck Plate | 286 Trailing Truck Adjusting Spring Case |
| 163 Cab Roof Water Gutter | 223 Gage Cock Hole | 287 Drop or Dump Grate Catch |
| 164 Ashpan Bell Crank | 224 Blow-off Cock | 288 Driving Box Wedge |
| 165 Smokebox Crane | 225 Handhold | 289 Piston Rod Extension Guide |
| 166 Smokebox Crane Bracket | 226 Buffer | 290 Power Reverse Reach Rod |
| 167 Smokebox Crane Traveler | 229 Cab Step | 291 Power Reverse Cylinder |
| 168 Exhaust Nozzle | 230 Cab Overhang | 292 Exhaust Pipe Base |
| 169 Exhaust Nozzle Damper | 231 Whistle Lever | 293 Receiver Pipe |
| 170 Back Pressure Brake Exhaust Pipe | 232 Whistle Lever Connection | 294 Low Pressure Exhaust Pipe |
| 171 Cylinder Cock Lever | 233 Vertical Shaft for Ashpan Slide | 295 Exhaust Pipe Expansion or Slip Joint |
| 172 Running Board Bracket | 234 Cab Brace | 296 High Pressure Exhaust Pipe |
| 173 Driver and Truck Equalizer Fulcrum | 236 Firedoor Frame | 297 High Pressure Steam Pipe Expansion or Slip Joint |
| 174 Driver and Truck Equalizer Pin | 237 Cylinder Cock Shaft | 298 Steam Pipe Support |
| 175 Smokebox | 238 Smokebox or Front End Door | 299 Receiver Pipe Connection |
| 176 Boiler | 239 Rocker Box | 300 Bottom Draw Casting |
| 177 Side Rod Crankpin | 240 Cab Roof Carline | 301 Main Boiler Bearing Saddle |
| 178 Main Crankpin | 248 Injector Steam Pipe | 302 Boiler Bearing Plate |
| 179 Eccentric | 250 Blower Pipe | 303 Boiler Centering Device |
| 180 Main Reservoir Hanger | 254 Top Cab Bracket | 304 Front Boiler Bearing Saddle |
| 181 Cab Front Window | 255 Bottom Cab Bracket | 305 Front Boiler Bearing |
| 182 Cab Back Window | 256 Saddle Tank | 306 Combustion Chamber |
| 183 Throttle Lever | 257 Eccentric Crank | 307 Line Check Valve |
| 184 Suction or Feed Pipe Bracket or Support | 258 Eccentric Rod | 308 Smoke Stack Extension |
| 185 Suction or Feed Pipe | 259 Link Support | 309 Pneumatic Cylinder Cock Operating Cylinder |
| 186 Injector | 260 Radius Rod | 310 Ashpan Dump Cylinder |
| 187 Injector Overflow Pipe | 261 Combination Lever | 311 Steam Grate Shaker Cylinder |
| 188 Sander | 262 Union Link | 312 Grate Shaker Shaft |
| 189 Sand Pipe | 263 Crosshead Arm | 313 Stoker Elevator Pipe |
| 190 Pilot Coupler | 264 Bell Ringer Bracket | 314 Stoker Distributor Pipe |
| 192 Coupler Release Rod or Unlocking Lever | 265 Petticoat Pipe | 315 Stoker Distributor |
| 193 Coupler Pocket | 266 Tank Filling Hole | 316 Stoker Lower Hopper |
| 194 Flag Staff | 267 Coal Bunker | 317 By-Pass or Drifting Valve Case |
| 195 Flag Staff Base | 268 Expansion Crosstie | 318 Slipping Throttle |
| 196 Pilot Brace | 269 Sander Lever | 319 Slipping Throttle Reach Rod |
| 197 Front Step | 270 Cylinder Cock Operating Lever | 320 Slipping Throttle Lever |
| 199 Fireman's or Rear Cab | 271 Eccentric Strap | 321 Radius Rod Hanger |
| 203 Front Boiler Brace | 272 Superheater Damper Cylinder | |
| 204 Driver Brake Lever | 273 Dry Pipe Elbow | |
| 208 Driving Spring Hanger Gib | 274 Air Pump or Compressor Bracket | |
| 209 Transverse Equalizer | 275 Arm Rest | |
| | 276 Reach Rod Guide | |

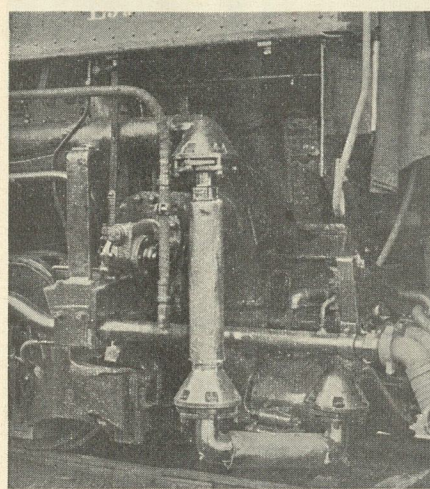
77
 Railway AGE
 Oct 1, 1920



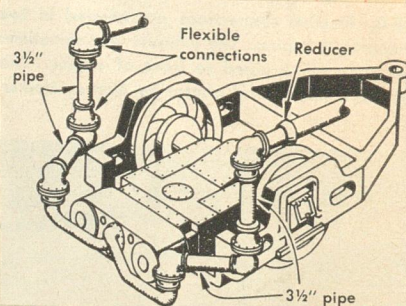
The Locomotive Booster on a Locomotive Is Like Having a "Pusher" Always Ready



Franklin trailer booster: (1) inlet and exhaust manifold, (2) rocker arm, (3) connecting rod, (4) clutch cylinder, (5) outside truck frame, (6) idler gear, (7) trailer wheel, (8) axle bearing, (9) bearing cap, (10) engine bed, (11) crank arm, (12) eccentric rod, (13) crosshead guide, (14) crosshead, (15) piston rod, (16) cylinder



Flexible steam pipe connection, showing lagging and method of fastening to locomotive. Booster engine cylinders are visible between the steam pipe and the water delivery pipe from tender.



Franklin Railway Supply Company, Inc.

Export Department—International Railway Supply Co.

30 CHURCH STREET

NEW YORK

332 So. Michigan Avenue
 Chicago, Ill.

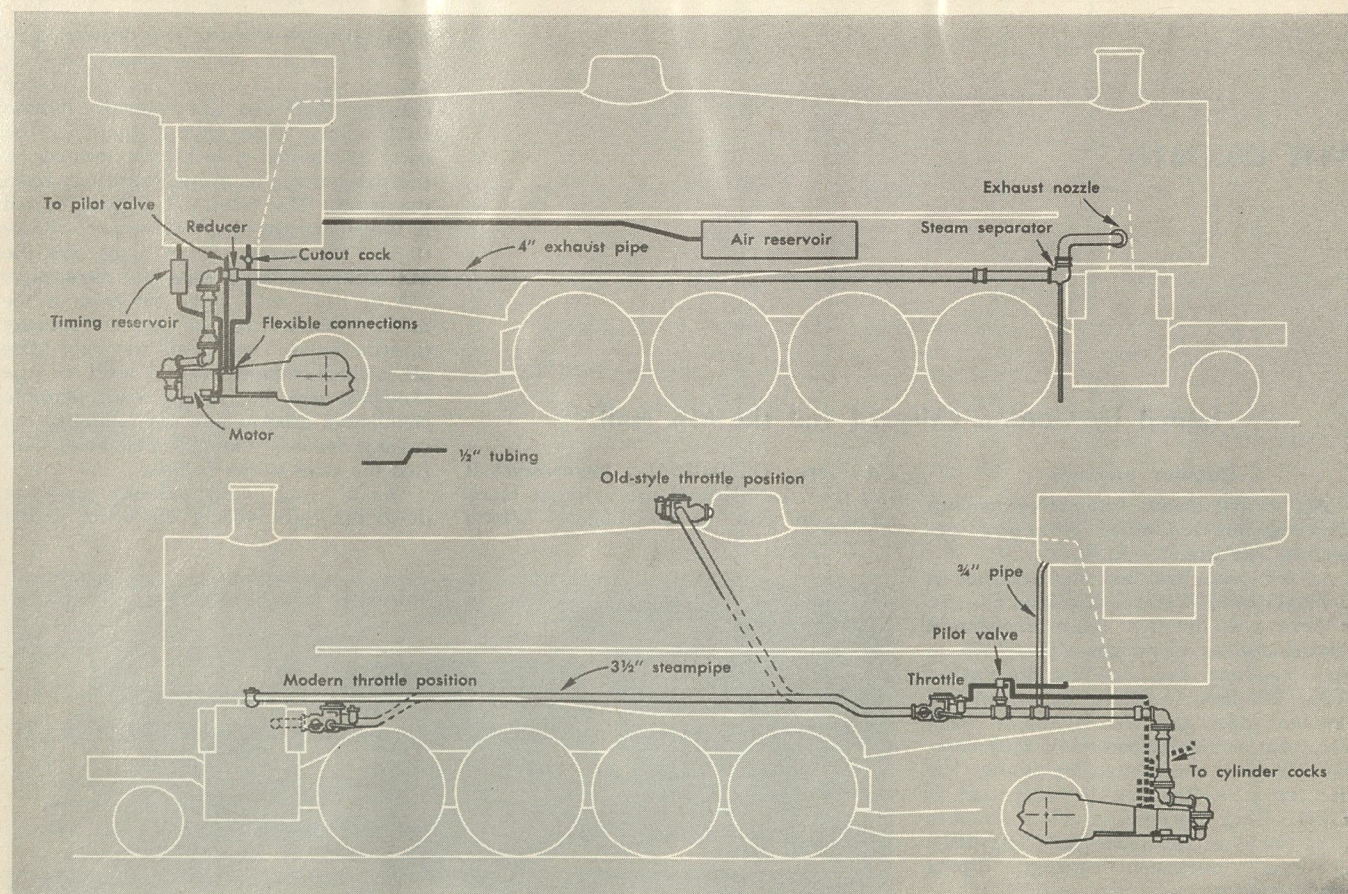
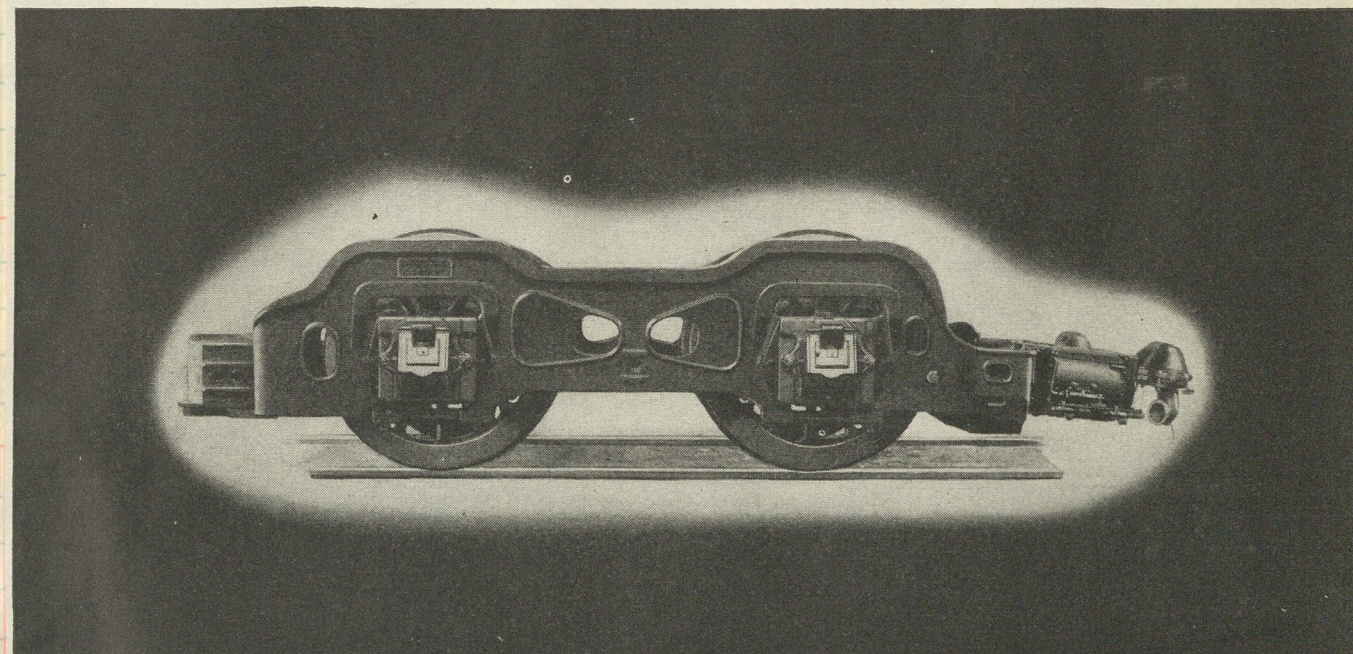
1112 Praetorian Bldg.
 Dallas, Tex.

728 Monadnock Bldg.
 San Francisco, Cal.

Franklin Railway Supply Co. of Canada, Limited, Montreal

INCREASED LOCOMOTIVE CAPACITY

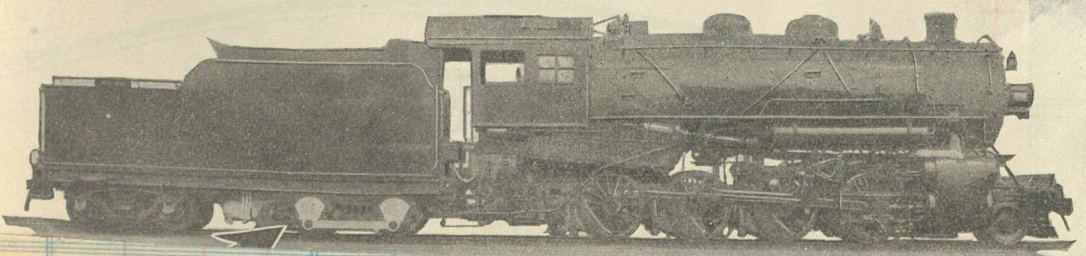
For Wartime Loads



In times like these, when locomotives are overworked with record-breaking traffic, the benefits of the Locomotive Booster* become obvious.

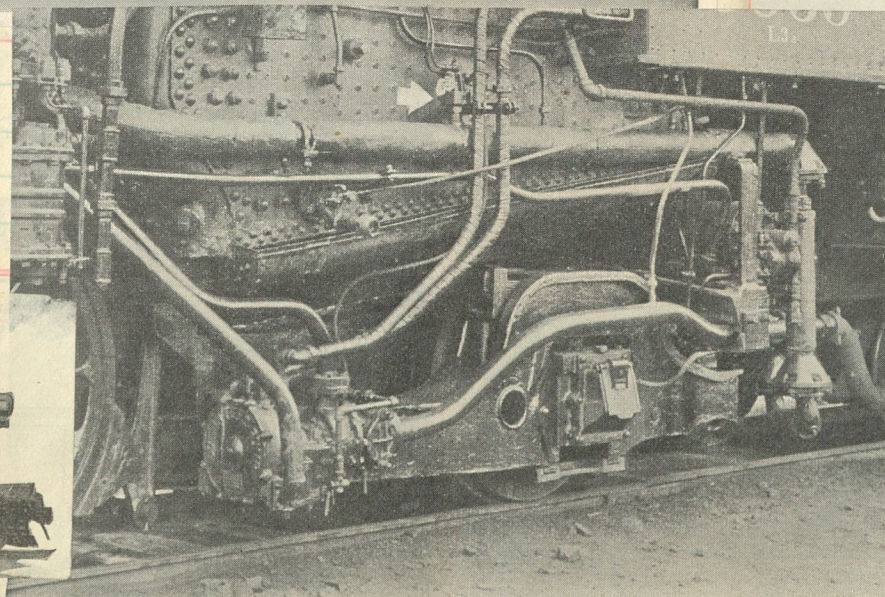
The supplementary power provided by the Booster permits the starting of heavier loads and faster acceleration to road speeds. This added power also gets heavy trains in and out of sidings in half the time, and helps you out of any tight spot — it speeds up traffic all along the line.

*Trade Mark Reg. U. S. Pat. Off.



The tender booster, first developed by the Delaware & Hudson, later mfg by the Bethlehem Steel Company

See Pg 61



The pilot valve is located atop the steam pipe just ahead of the two vertical pipes. Milwaukee Road steamfitters lagged the steam pipe of this 2-8-2. Note the brackets securing the steam pipe to the boiler. Note too that the piping goes behind other loco fittings such as the air pump. The 3/4 inch pipe to the cab-mounted preliminary throttle valve disappears under the boiler lagging.

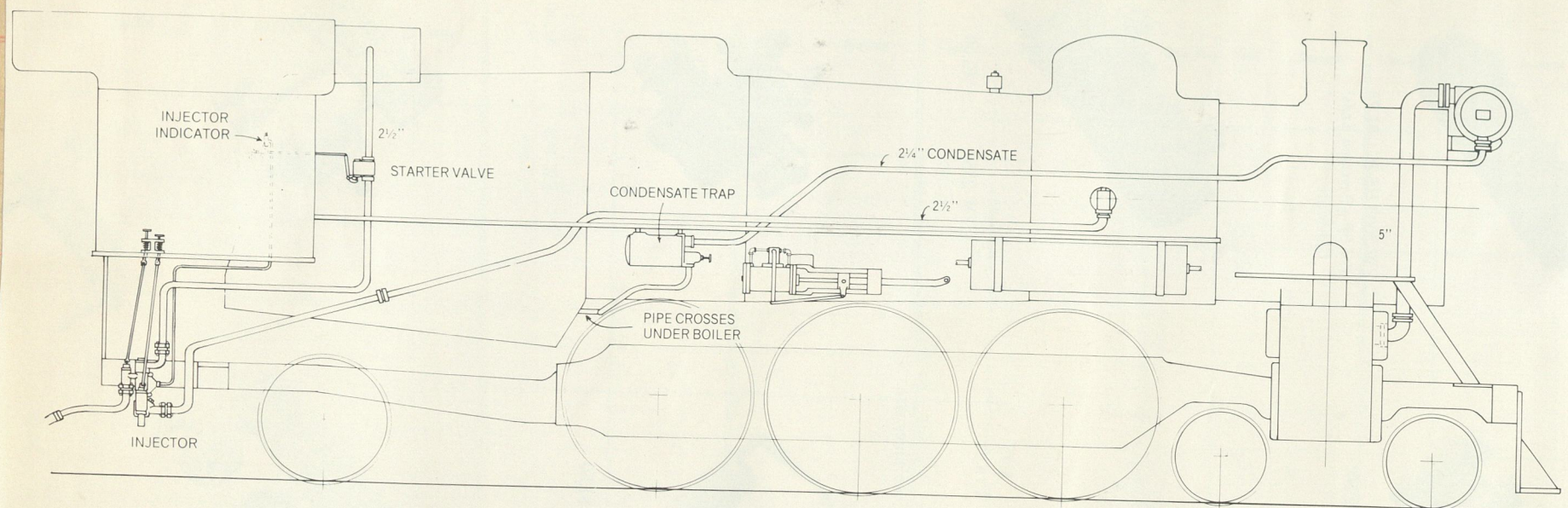
July 17, 1943

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

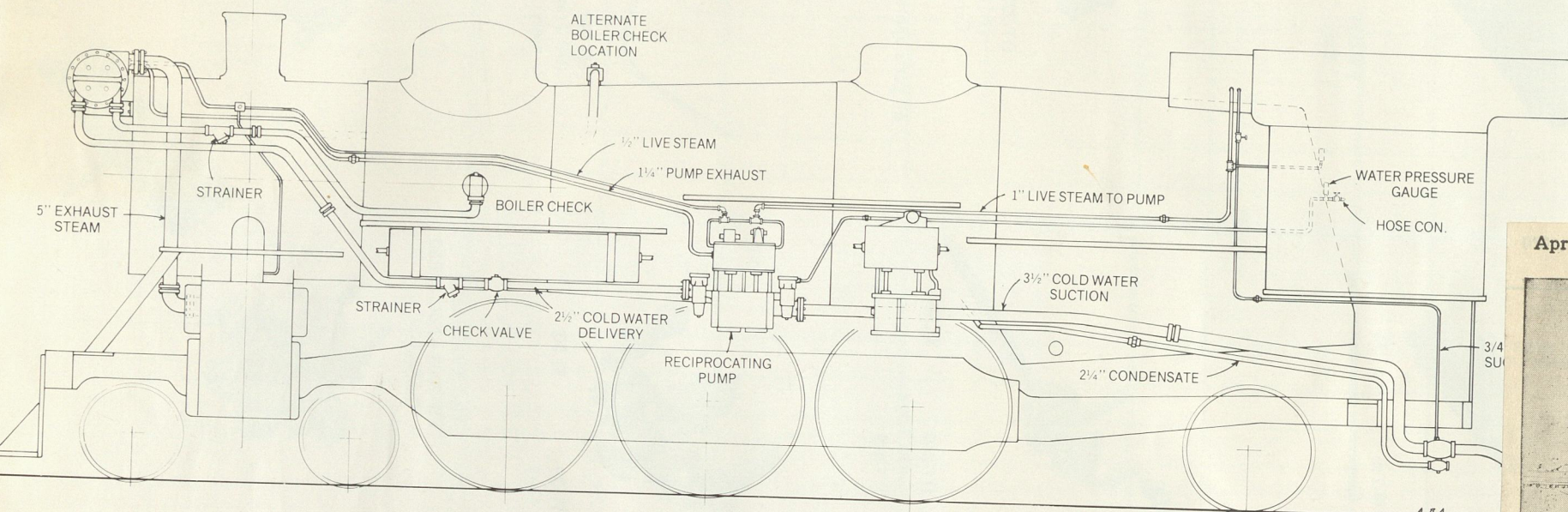
NEW YORK

CHICAGO

In Canada: FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL

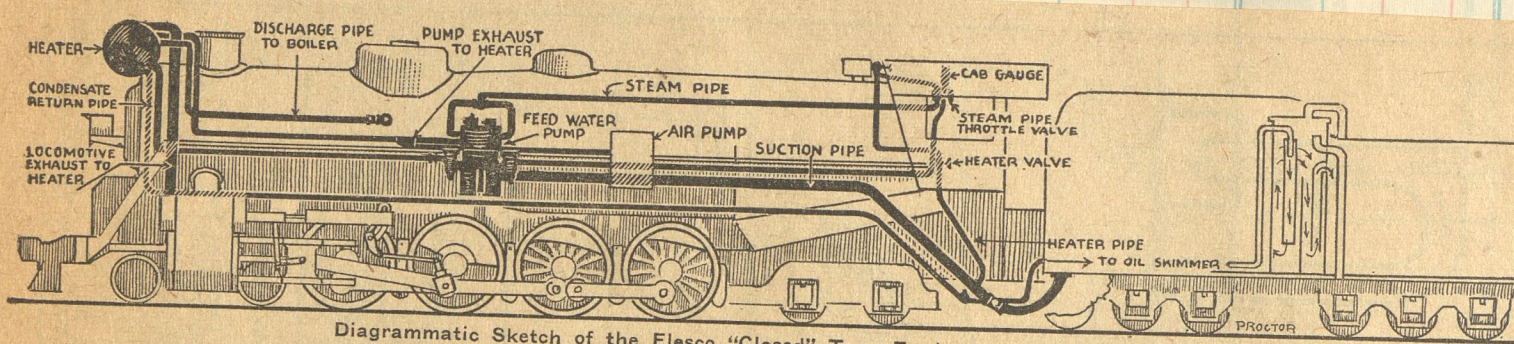


Pipe sizes shown are I.D., add 1/2" for O.D.



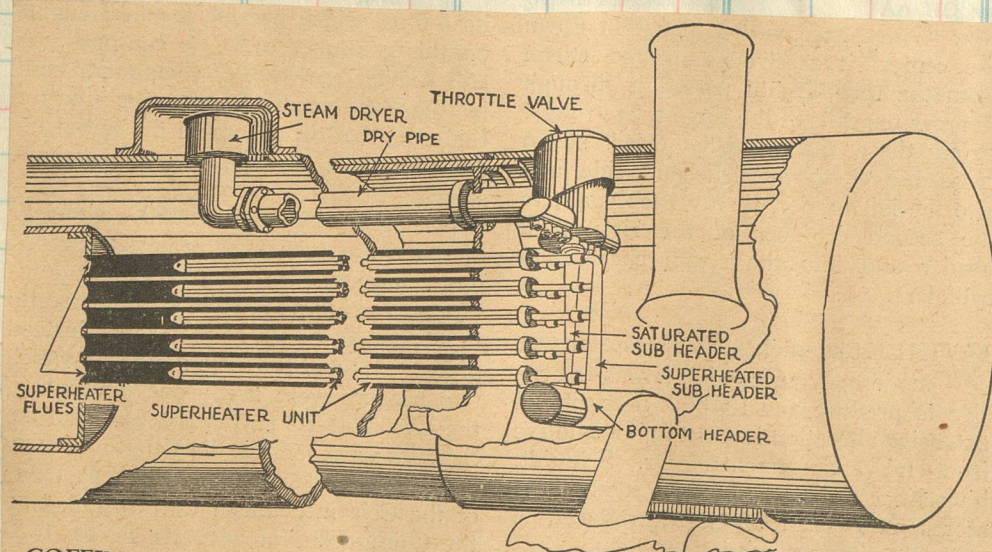
ELESCO FEEDWATER SYSTEM

© Copyright 1979

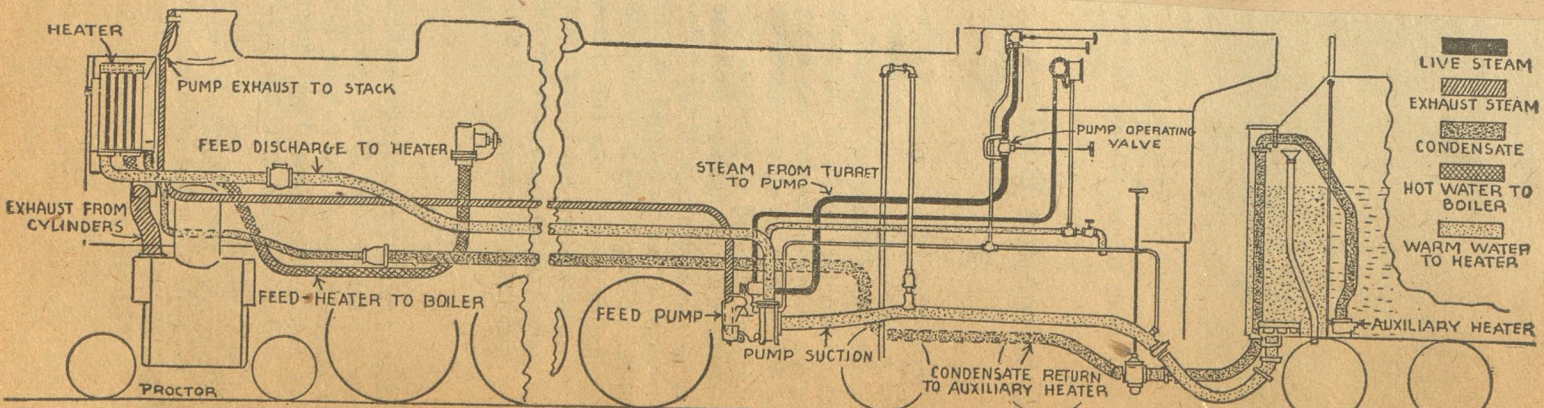


Diagrammatic Sketch of the Elesco "Closed" Type Feedwater Heater Assembly

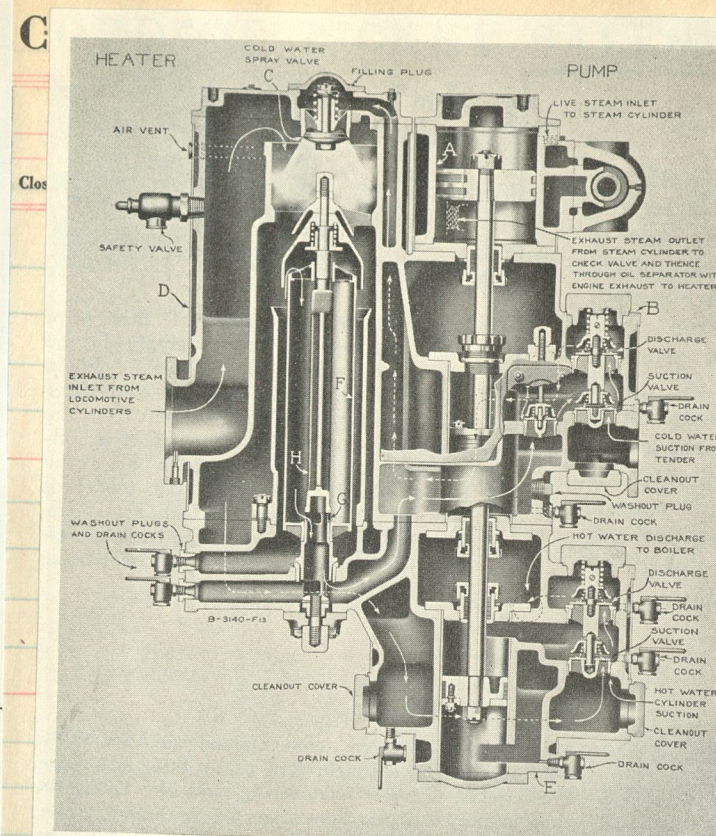
(1) The principle of the superheater has been known for more than a hundred years, but the fire tube superheater as we know it was introduced by Dr. Wilhelm Schmidt, of Cassel, Germany, in 1902. Four years previous smokebox-type superheaters of his invention had been tried out on several engines of the Prussian State Railways. They did not resemble his later efforts very much, and the design of 1902 is really the prototype of our modern standard superheaters, manufactured by the Elesco Company. Despite the fact that many different superheaters were tried in this country between 1900 and 1910, the Schmidt type won out; and in July, 1910, Elesco made its first large application of superheaters to the brand new Alco-built Class Q-4 Pacific types of the Northern Pacific, numbered from 2208 to 2225. Nos. 2210, 2211, 2213, 2215-2225, according to our records, still are or recently have been in service. Photo of No. 2224 as she looked when built on page 81.



COFFIN superheaters of the CS type divert steam from front-end throttle through saturated sub-header to cylinders via superheated sub-headers



In Addition to Its Closed Heater, the Coffin System Employs an Injector Heater in the Locomotive Tank. Here the Oil Is Removed from the Condensate and the Water Itself De-aerated



Type BL Worthington heater and pumps.

EXPLAIN the operation of the Elesco type E superheater.—L.S., Elkhart, Ill.

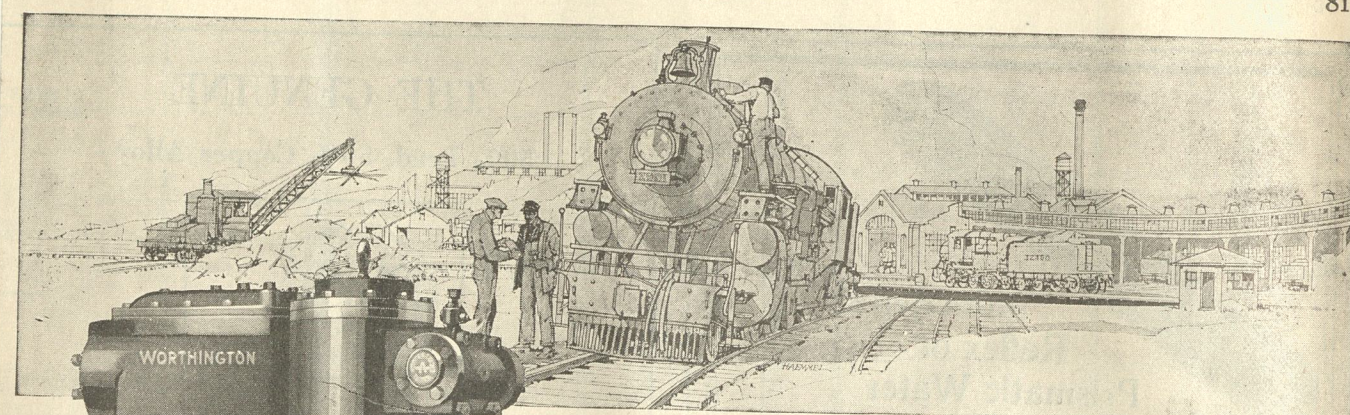
The Elesco type E superheater is one of two firetube superheaters widely used in this country, the other being the Elesco type A. The E model, which absorbs considerably more heat than its predecessor, and has practically supplanted it in modern installations, consists of a "header" or double steam chamber, located in the locomotive smokebox, and connected to a series of pipe units which extend back into the forward ends of the boiler flues. Saturated steam, which at present operating pressures has a temperature of from 300 to 450 degrees (F), passes from the steam dome into the receiving compartment of the header and then circulates through the pipe units which takes the form of elongated coils. Exhaust gases from the boiler flues heat the coils and thereby raise the temperature of the steam inside as much as 300 additional degrees. It then passes on to the second chamber of the header and is fed through the front-end throttle into the cylinders.

Superheated steam, as you no doubt know, has a greater volume, per unit of wt. than saturated steam and does more work during admission and expansion in the cylinder, on a smaller consumption by weight, per stroke.

April 30, 1920

RAILWAY AGE

81



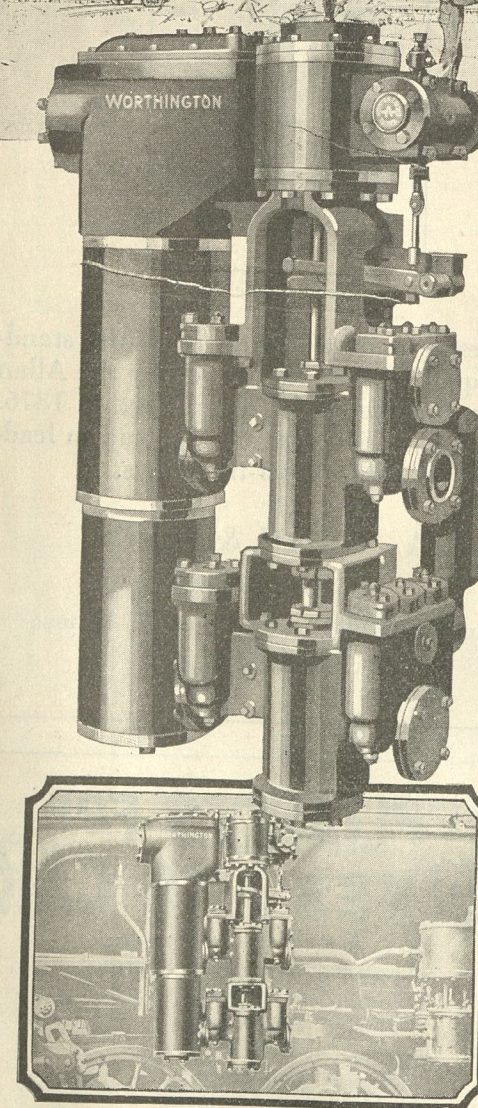
Worthington reduces Locomotive fuel costs by 10%

WORTHINGTON Locomotive Feed Pump and Feed Water Heater necessarily uses enough exhaust steam from locomotive to heat all of the feed water. But because it does not waste the condensate with its contained heat, Worthington Feed Heater conserves locomotive heat and reduces coal consumption by increasing boiler efficiency.

Fuel savings average about 10% or say 450 tons of coal per year for each locomotive, which is no mean item, and which pays for the Worthington Feed Heater installation in about 18 months.

Add to fuel economy increased steaming capacity to the tune of 12%, and consider the ease with which the Feed Heater is attached—even to old locomotives—and you have real reason why to consider Worthington Feed Heater necessary equipment.

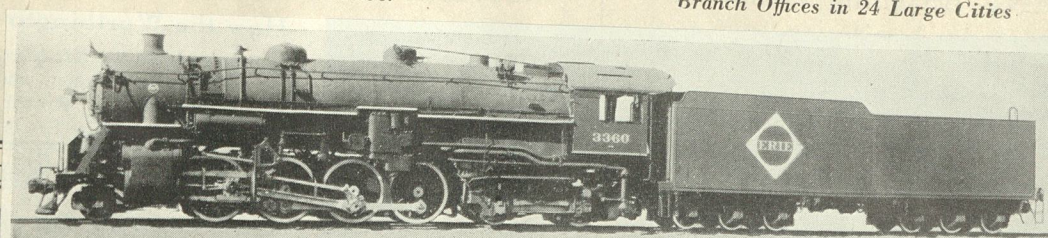
Get in touch with our engineering service or send for Bulletin B-1607 for more complete information.



Worthington Locomotive Feed Heater Applied to Mikado Locomotive.

WORTHINGTON PUMP AND MACHINERY CORPORATION
Executive Offices: 115 Broadway, New York City
Branch Offices in 24 Large Cities

PUMPS.



Worthington Pump & Machinery Co.

Type BL Worthington. This Erie Railroad Berkshire-type freight locomotive, built by Baldwin in 1928, is equipped with the Type BL Worthington board over the third and fourth drivers. Later types have the pumps separated from the heater itself.

Deane Works, Holyoke, Mass.
Blake & Knowles Works
East Cambridge, Mass.
Worthington Works
Harrison, N. J.

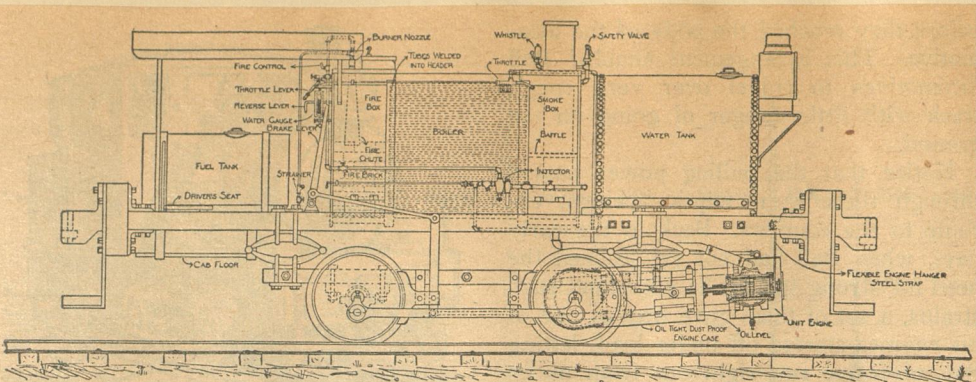
Epping-Carpenter, Pittsburgh, Pa.

Laidlaw Works, Cincinnati, Ohio. Gas Engine Works, Cudahy, Wis.
Power & Mining Works
Cudahy, Wis.
Snow-Holly Works
Buffalo, N. Y.



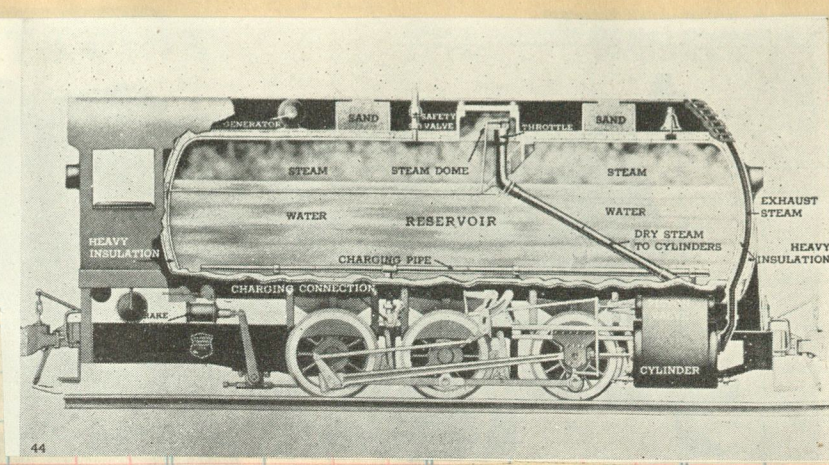
CUT HERE
To Make
Short Sheet

Clos. No. Sold Amount

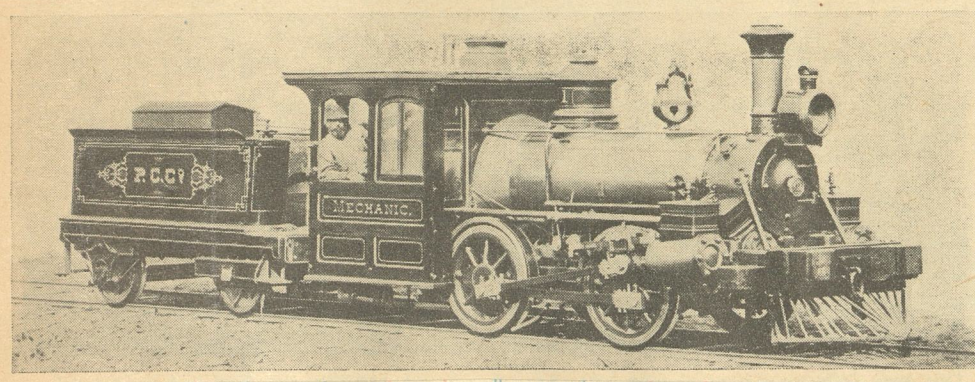


STANDARD BELL ENGINE DESIGN, showing general arrangement of parts. Note flexible steam connection to cylinders

Diagrammatic view of typical fireless locomotive. Steam, fed into the tank through perforated charging pipe running along bottom, bubbles through water, heating it thoroughly.

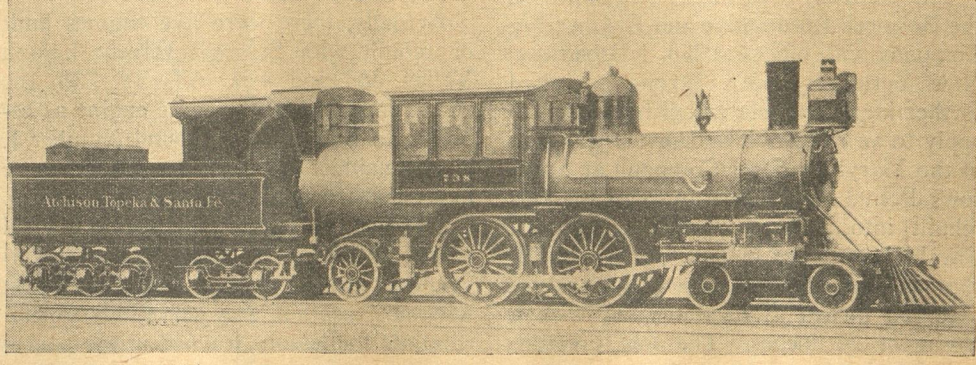


Amount Clos. No. Sold Amount Clos. No. Sold Amount



This little teapot, the MECHANIC, of the Pennsylvania Coal Co built in 1879 was the first 3 cylinder engine, Designed by John Smith, G.M. of the P.C.C.

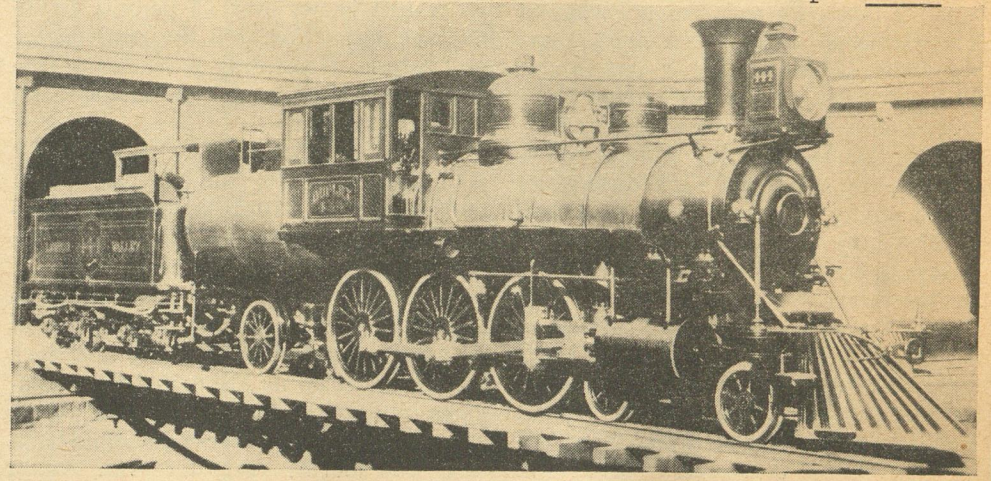
AT&SF #738 blt by Schenectady 1889 c/n 2405



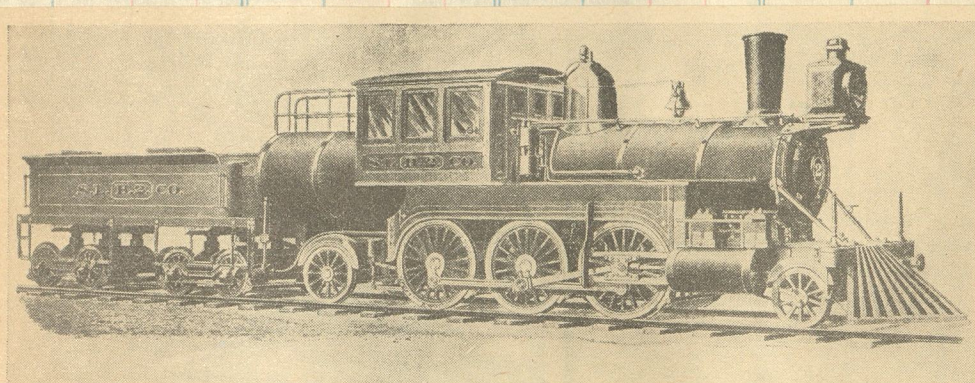
Distinguishing feature of five Strong engines actually built was a stayless firebox. Composed of two circular corrugated furnaces, joined at their forward ends by a breechless pipe that led to a similarly fluted combustion chamber, they expanded and contracted without damage to the outer boiler shell

Design of the first 4-4-2 type blt by Hinkley 1888

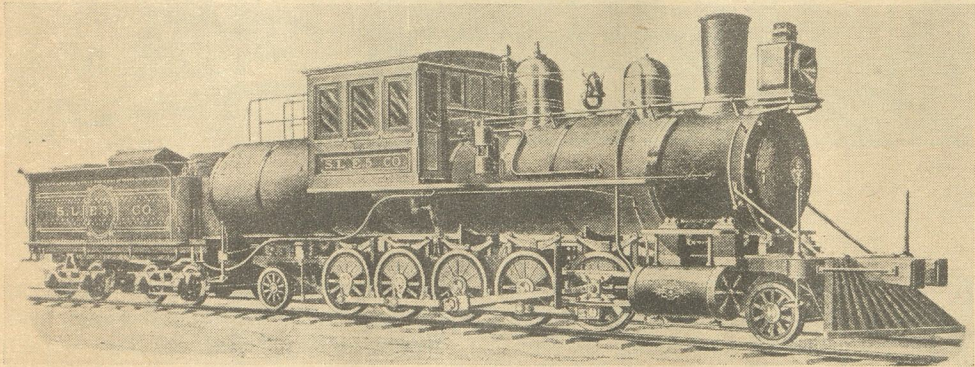
FIRST 4-6-2 blt at L.V.'s Wilkes Barre shops 1886



Widely demonstrated in 1886 and '87, Duplex 444 captured the imagination of motive power men, but the mediocre performance of succeeding Strong engines wrote *finis* to another chapter in the disheartening story of "Locomotive Oddities"



Strong's designs of 1889!



Two other Strong engines which were never built. While the resourceful inventor failed in his greatest effort, he introduced the Pacific wheel arrangement and pointed the way to the 2-10-2 or Santa Fe type. In addition, his gridiron pattern valves were superior to contemporary balanced valves

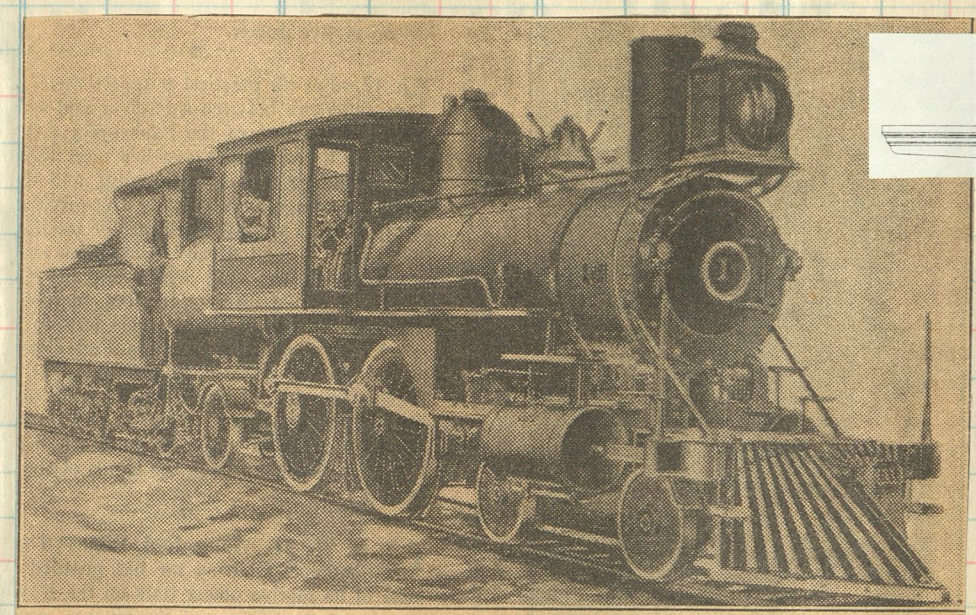
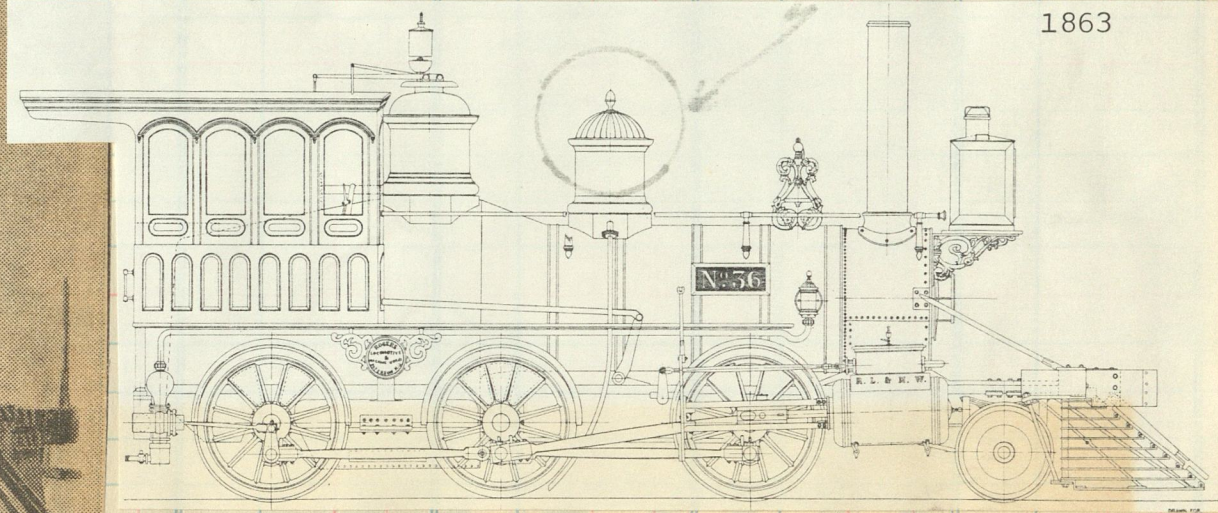
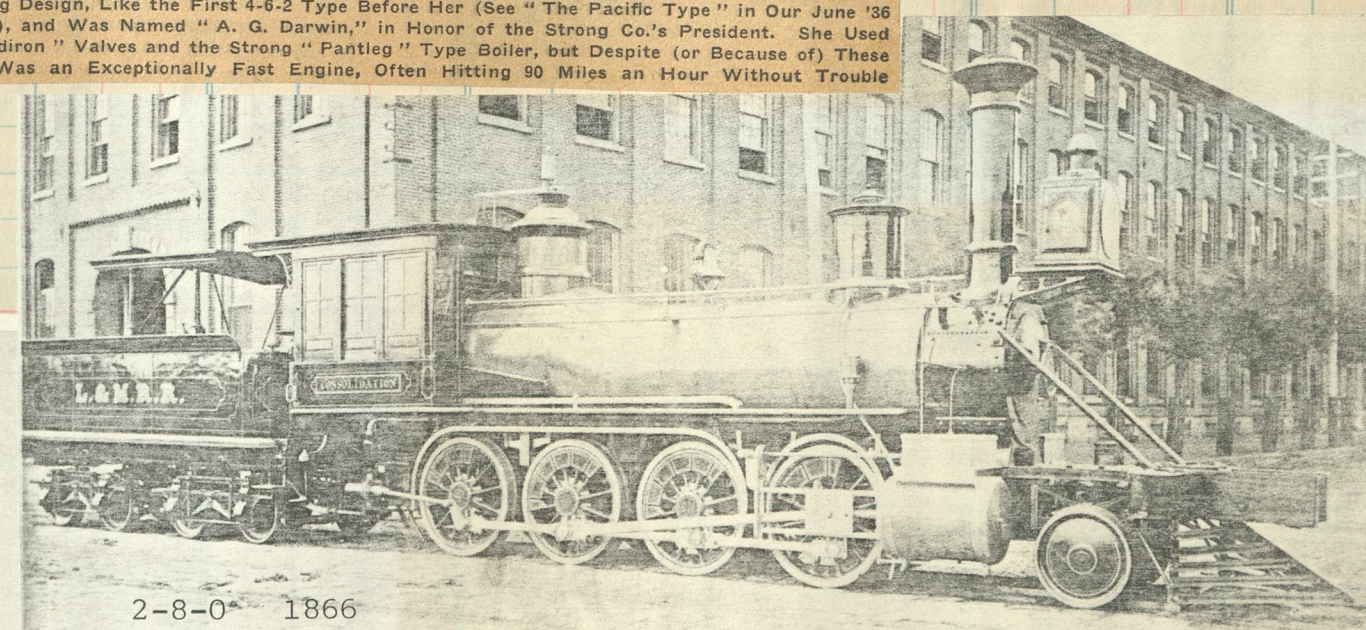


Photo from W. A. Lucas, 56 Tuxedo Ave., Hawthorne, N. J.
The First 4-4-2 or Atlantic Type Engine is said to have been built for the Atlantic Coast Line in 1895. This 4-4-2, however, was completed at the Hinkley Works in 1888, and was tried out on many railroads before the A. C. L. engines saw the light of day. She was of the Strong design, like the first 4-6-2 type before her (see "The Pacific Type" in our June '36 issue), and was named "A. G. Darwin," in honor of the Strong Co.'s President. She used "Gridiron" valves and the Strong "Pantleg" type boiler, but despite (or because of) these she was an exceptionally fast engine, often hitting 90 miles an hour without trouble

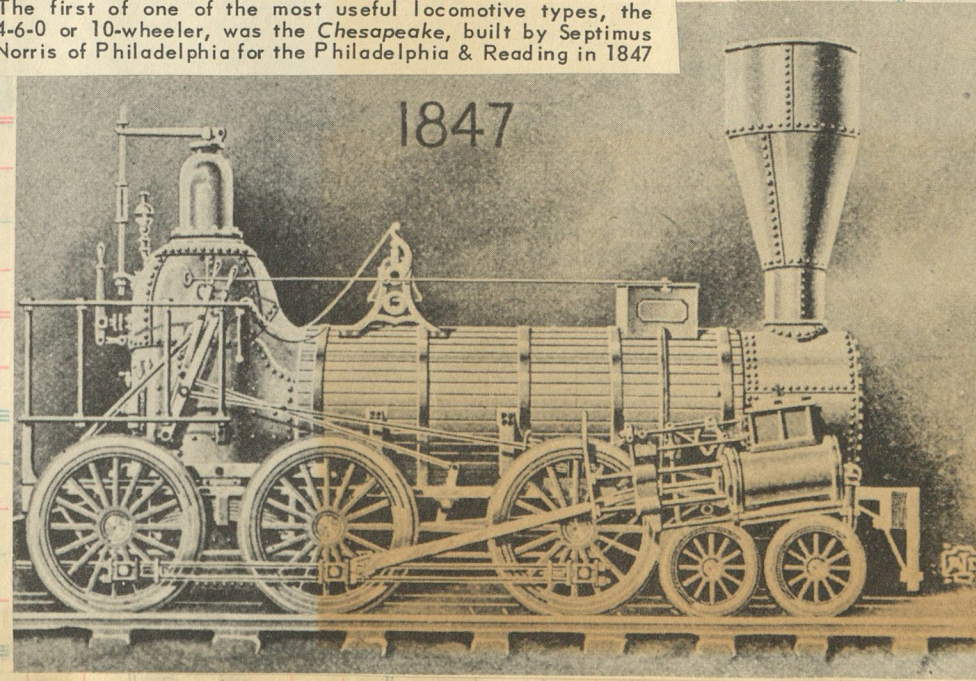


1863



2-8-0 1866

The first of one of the most useful locomotive types, the 4-6-0 or 10-wheeler, was the Chesapeake, built by Septimus Norris of Philadelphia for the Philadelphia & Reading in 1847



1847

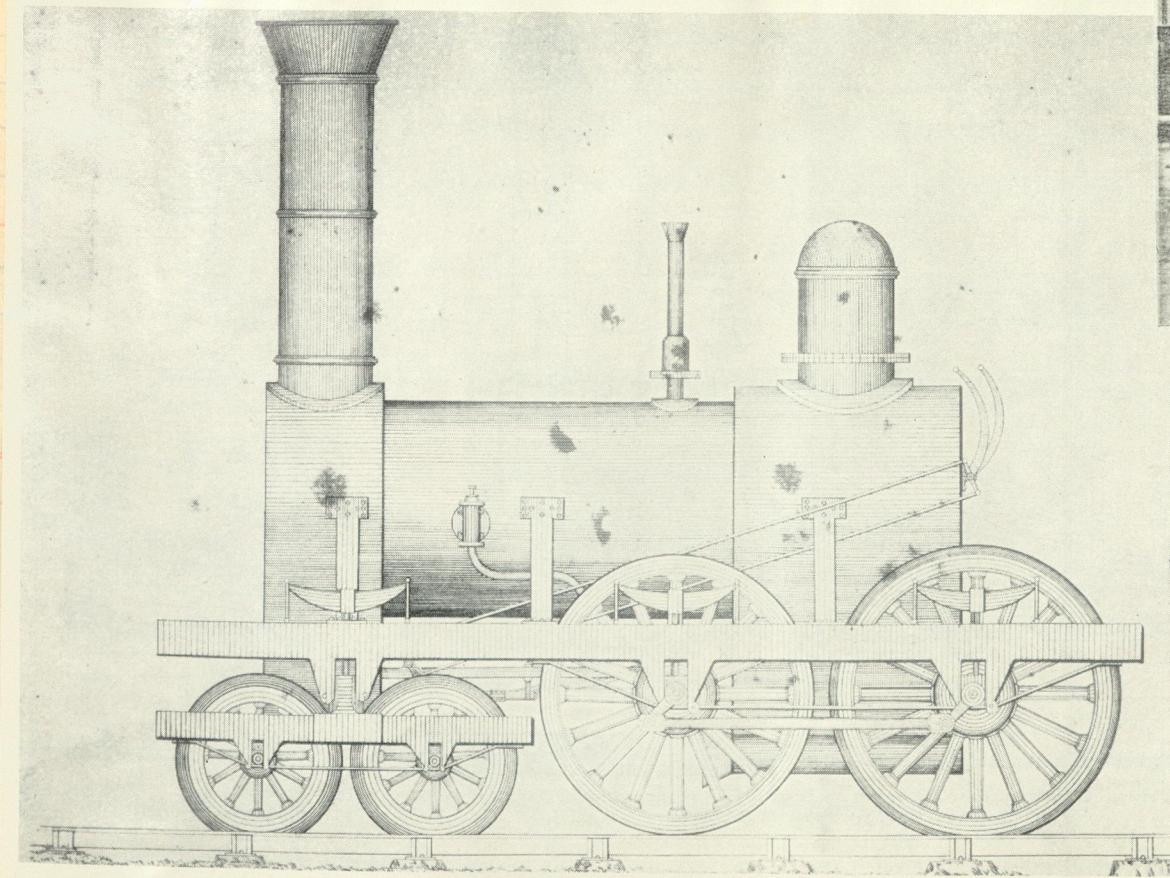


Illustration from the 1836 patent publicity of the first 4-4-0 of all. This 27,000-lb. machine evolved by H. R. Campbell had an estimated haulage capacity of over 400 tons at 15 m.p.h. (Courtesy: Historical Society of Pennsylvania)

SELLER
DATE
FORM DESTINATION



Round Tables are a feature of the Dining Car

DINING CAR SERVICE.



Another view of the Dining Car Lounge

↓ About 1940

DINING CAR
IN
OPPOSITE
DIRECTION

NEW YORK CENTRAL SYSTEM DINING SERVICE

MARTINI COCKTAIL 45 SHERRY WINE 45 MANHATTAN COCKTAIL 45

Selective Meals

Price Opposite Each Entree Includes Complete Meal

Rosetted Radishes Celery Hearts, Iced
Ripe Olives Sweet Gherkins
Pepper Pot, 20th Century
Consomme, Hot or en Gelee
Chilled Tomato Juice
Fresh Shrimp Jackson
Hot Clam Bouillon
Two-Tone Cocktail

Baked Slice of Kennebec Salmon, Caper Sauce,
Cucumbers 1.45

Genuine Virginia Sausage with Sweet Potatoes
Mousseline 1.50

Beefsteak, Kidney and Fresh Mushroom Pie
with Parisienne Vegetables 1.60

Roast Young Turkey, Chef's Dressing,
Cranberry Sauce 1.65

Broiled Selected Sirloin Steak 2.35

Garden Vegetable
French Fried Potatoes
Candied Sweet Potatoes

CLARET WINE, 1/4 BOTTLE, IMPORTED 1.00; AMERICAN .45
SAUTERNE WINE, 1/4 BOTTLE, IMPORTED 1.00; AMERICAN .45

Green Salad with Beets and Egg, N.Y.C. Dressing

Assorted Rolls

Fresh Rhubarb Pie
N.Y.C. Fresh Strawberry Ice Cream
Grape Fruit on Ice, Half
Cherry Almond Gelatin with Cream
or
N.Y.C. Baked Apple

Cream Cheese with Toasted Saltines, Guava Jelly
Blue Cheese with Toasted Biscuits

Tea N.Y.C. Special Coffee Individual Milk

Guests will please write on check each item desired.

BRANDY 65 BENEDICTINE 60 CREME DE MENTHE 65

THE 20th CENTURY SALAD BOWL

Ry-Krip
(Per Person)
60 Cents

For Sales
In U.S.A. Only
Old Fashioned Cocktail... .60
Apricot Brandy .65
Medoc .50
Grand Marnier .60

For Sales
In U.S.A. Only
Moselle Wine
1/4 Bottle, Imported 1.50
American .45
Riesling
1/4 Bottle, American .45
Rhine Wine
1/4 Bottle, Imported 1.50
Domestic Beer, Bottle .30
Domestic Ale .30

CHILDREN — Parents may share
their portions with children or
ask for Children's Menu.

A LA CARTE

SOUPS

Pepper Pot, 20th Century, Cup .30
Tureen .45
Consomme, Hot, Cup .30
Jellied Consomme, Cup .40
Clam Bouillon, Hot or Cold .25

JUICES and COCKTAILS

Fresh Shrimp Jackson .45
Fruit Cup .30
Chilled Tomato Juice .25
Chilled Prune Juice .25
Clam Juice Cocktail .25
Tomato Juice Cocktail .30
Two-Tone Cocktail .30

ENTREES

Baked Slice of Kennebec Salmon,
Caper Sauce, Cucumbers, Potatoes .95
Genuine Virginia Sausage with Sweet
Potatoes Mousseline, Garden
Vegetable .1.00
Beefsteak, Kidney and Fresh Mushroom Pie
with Parisienne Vegetables .1.10
Roast Young Turkey, Chef's Dressing,
Cranberry Sauce, Garden Vegetable,
Potatoes .1.15
Omelettes—Plain .50
Parsley or Jelly .65
Chopped Ham or Bacon .65
Small Sirloin Steak with Potatoes .1.85
Grilled Lamb Chops (2) with Potatoes .1.25
Broiled Ham or Bacon .75
Half Portion .40
Broiled Ham or Bacon with Eggs .75
Frankfurters (Hot or Cold),
with Potato Salad .65
Frankfurters (Hot or Cold),
with Baked Beans, Bread and Butter .80
Grilled Imported Sardines, Sliced Tomatoes,
Toasted Rye Bread .85
Oven Baked Beans (Hot or Cold),
Bread and Butter .55
(Charcoal used exclusively for Broiling)

VEGETABLES

Stewed Tomatoes .25
Early June Peas .25
Fresh Vegetable .35
Potatoes—French Fried .25
Candied Sweet Potatoes .30

DESSERTS

Fresh Rhubarb Pie .20
N.Y.C. Fresh Strawberry Ice Cream .30
Cherry Almond Gelatin with Cream .30
Pineapple in Syrup .35
Orange Marmalade .25
Orange 20; Sliced 30
N.Y.C. Baked Apple with Cream .35
Grape Fruit on Ice, Half .30
Stewed Prunes .35
Figs in Syrup .45
Extracted Honey 25
Orange Juice, Iced 30

CHEESE

Blue Cheese with Toasted Hard or Soft Biscuits 35
Cream Cheese with Toasted Saltines, Guava Jelly 40

Ripe or Green Olives 30
Sliced Tomatoes 35
Lettuce 35
Thousand Island Dressing 20
White, Whole Wheat or Rye Bread 15
Crackers 10
N.Y.C. Special Coffee (Pot) 25
Malted Milk (Pot for One) 25
Individual Milk 15
COLD SUGGESTIONS, SALADS, ETC.
Celery Hearts, Iced 35
Chicken Salad 90
Combination Salad 45
Fruit Salad 65
Chiffonade Salad 35
Lettuce and Tomato 40
Mayonnaise Dressing 20
BREAD, ETC.
Toast, Dry or Buttered 20
Yeast Cake 10
Ry-Krip 15
Kaffee Hag Coffee (Pot for One) 25
Orange Pekoe, India or English Breakfast Tea (Pot for One) 25
Sanka Coffee (Pot for One) 25
Postum (Pot for One) 25
Cocoa (Pot for One) 25
Buttermilk, Bottle 20

Prices are Quoted in United States Currency

W-A

B. J. Bohlender, Manager Dining Service, New York

LUNCHEON

RELISHES
MELON MANGOES, 15
GREEN OR RIPE OLIVES, 20
GHERKINS, 10
SOUPS
CONSOMME IN CUP, 25
MULLIGATAWNY, 20
HALF DOZEN N. Y. COUNTS, STEW, 35
MEATS, ETC.
OX TONGUE WITH POTATO SALAD, 35
PICKLED LAMB TONGUE, 45
BAKED BEANS WITH INDIVIDUAL HOT BROWN BREAD, 45
CALIFORNIA TUNA IN OIL, 35
SALADS
HEAD LETTUCE, FRENCH DRESSING, 15
COLD ASPARAGUS, VINAIGRETTE, 35
CHICKEN SALAD, MAYONNAISE, 40
EGGS
EGGS (2) BOILED, FRIED, SCRAMBLED OR SHIRRED, 21
PLAIN OMELET, 3 EGGS, 35
WITH CHEESE OR JELLY, 45
WITH MARMALADE, 50
POTATOES
GERMAN FRIED OR HASHED BROWN, 15
BREAD, TOAST AND SANDWICHES
BREAD AND BUTTER, 10
CLUB SANDWICH, 15
DESSERTS
ORANGE, 10
PRESERVED GINGER, 20
SPANISH TANGELINE, CHILLED, 25
PEELED MUSCAT GRAPES, CHILLED, 25
STRAWBERRY PRESERVES, 25
ICE CREAM WITH ASSORTED WAFERS, 20
HERKIMER COUNTY, 15
ROQUEFORT, 25
CLUB HOUSE, 25
BEVERAGES
COFFEE, CUP, 10 (SERVED IN POT)
COCOA, POT, 15
INSTANT POSTUM, 10
INDIVIDUAL MILK, BOTTLE, 15
INDIVIDUAL GRAPE JUICE, RED OR WHITE, 15
TEA, POT, 15
MILK, 10
LEMONADE, 15
TODD, 25
MILK, 10
LEMONADE, 15
TODD, 25

Patrons are respectfully requested to write their orders on the meal
check. Waiters are forbidden to accept verbal orders.
The Passenger Traffic Manager, C. B. & Q. R. R., Chicago, will thank-
fully receive criticism of the service.

LUNCHEON menu of Minnesota Day Limited in 1916.

416. When and where were railway dining cars introduced?

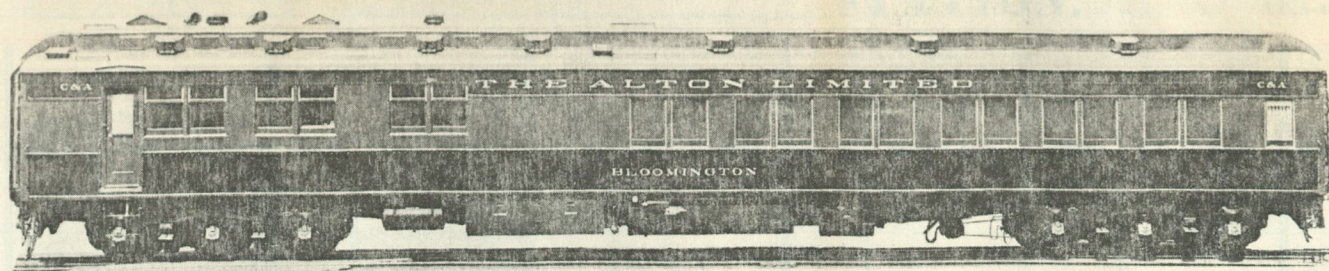
The first railway dining cars were operated by the Philadelphia, Wilmington & Baltimore Railroad (now a part of the Pennsylvania) between Philadelphia and Baltimore in 1863. There were two of these cars, remodeled day-coaches, 50 feet in length, each fitted with an eating bar, steam box and "other fixtures usually found in a first-class restaurant." The food, however, was prepared at the terminal stations and placed on the cars immediately before the departure of the trains. These primitive "dining cars" remained in operation for about three years. In 1867, George M. Pullman introduced "hotel cars" (sleeping cars equipped with kitchen and dining facilities) the first three of which were the "President," the "Western World" and the "Kalamazoo." The first Pullman-built car devoted entirely to restaurant purposes was the "Delmonico," operated on the Chicago & Alton Railroad in 1868.

BALTIMORE AND OHIO RAILROAD DINING CAR DEPARTMENT

Three arrangements for Service in Dining Cars,
all Baltimore and Ohio Quality

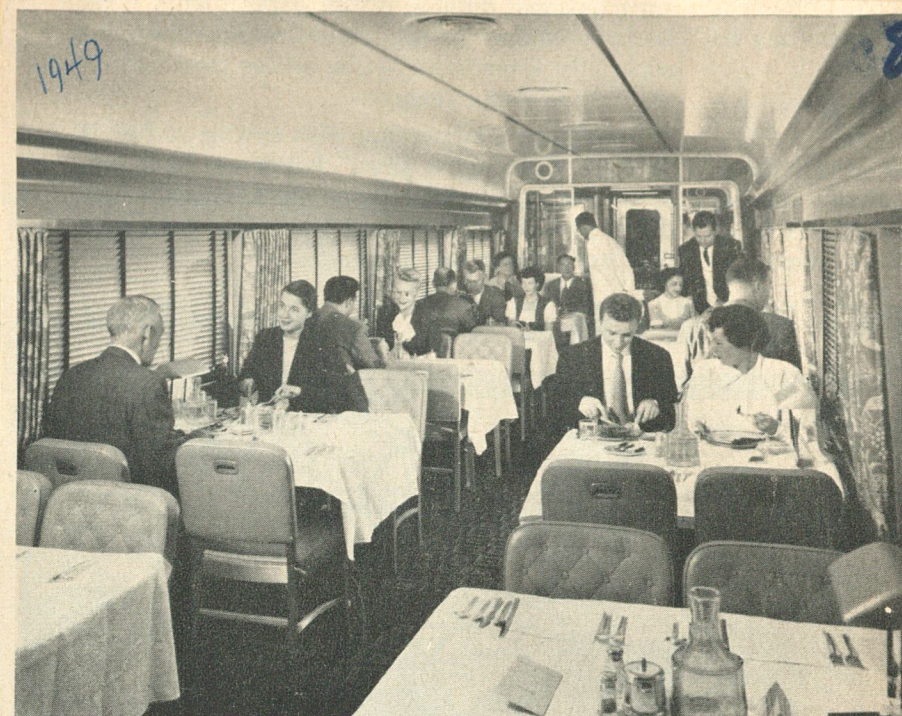
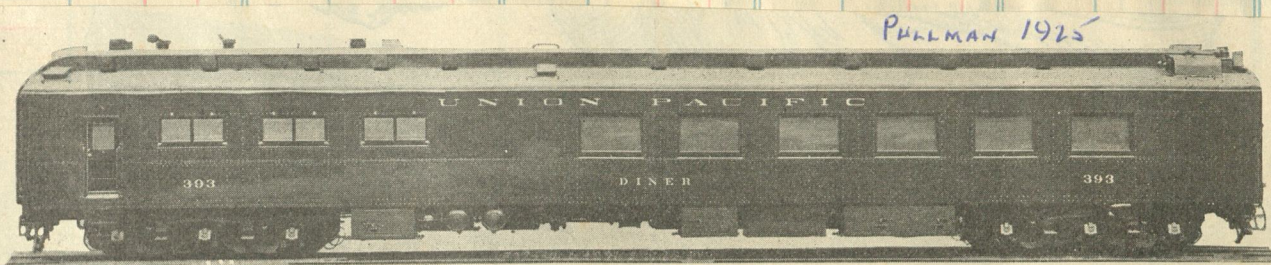
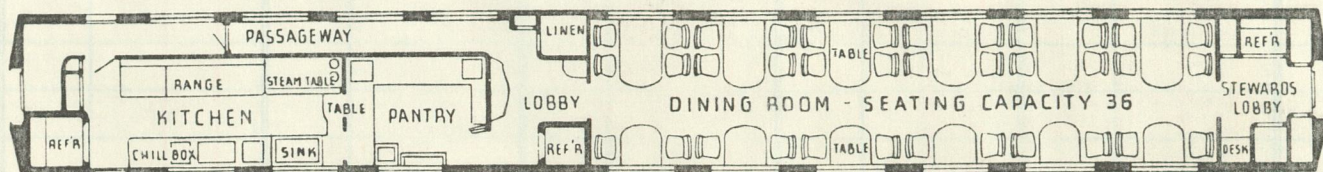
- 1st. Regular a la carte at moderate prices.
- 2nd. Baltimore and Ohio Club meal includes cup of soup, one meat or fish or egg dish, two vegetables, dessert, bread, coffee, tea or milk, for 85 cents per person.
- 3rd. Our \$1.25, Table D'Hote Baltimore and Ohio Special Meal speaks for itself.

(SEE OTHER SIDE)



BLOOMINGTON dining car seated 36, was finished in South American rosewood and equipped with many candelabra and deck

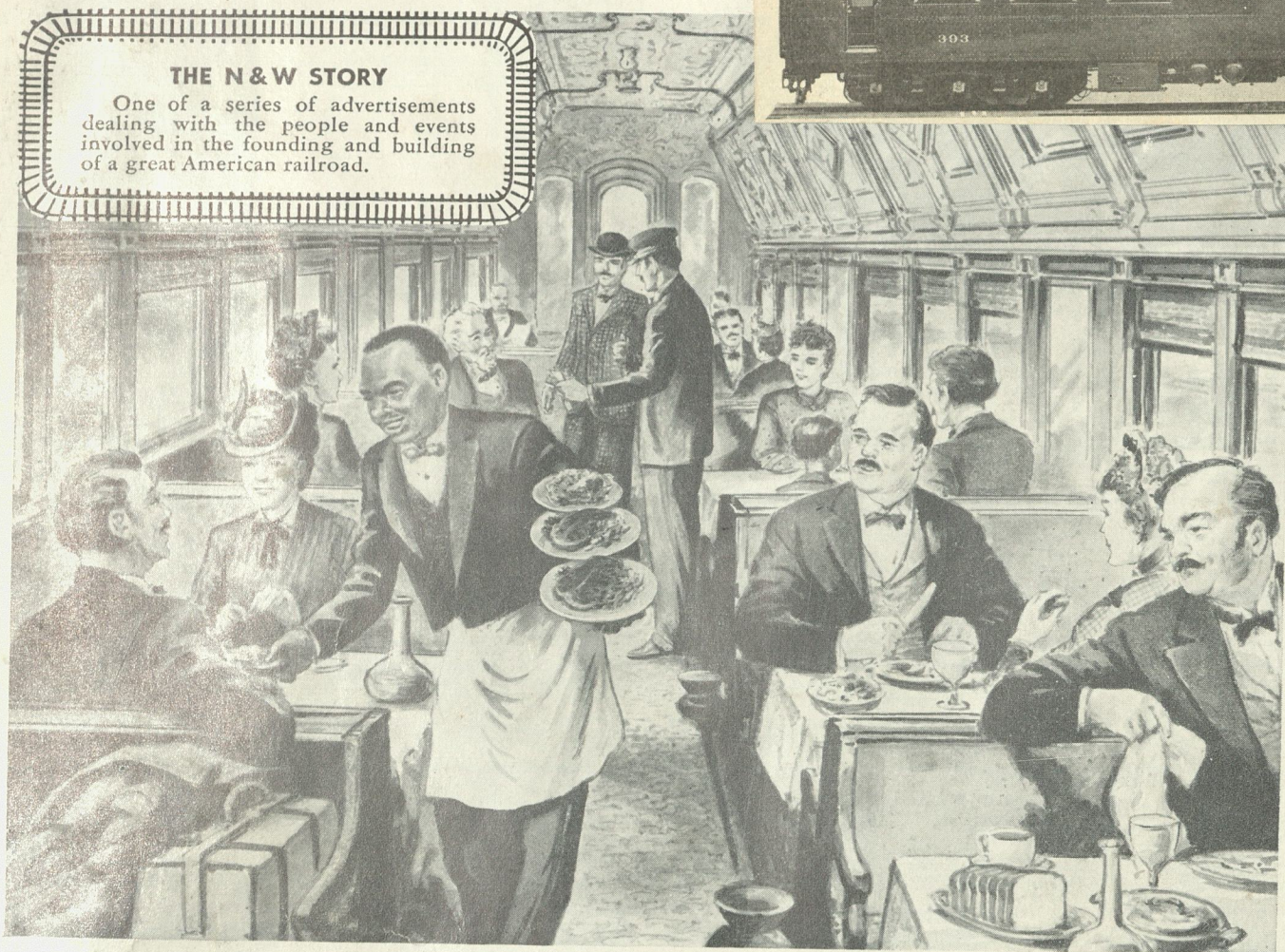
chandeliers, served famous "Alton Standard" meals. In competitive Chicago-St. Louis market, a menu could mean much.



Publicity passengers seem happy about their dinner fare on this new \$135,000 Pennsylvania fiesta-styled diner, one of eight being delivered. PRR is modernizing 40 other dining cars

THE N & W STORY

One of a series of advertisements dealing with the people and events involved in the founding and building of a great American railroad.



Button Shoes... Ostrich Plumed Hats... and FINE FOOD...

At the turn of the century, folks often rode Norfolk and Western trains solely for the pleasure of dining on "cafe" cars.

These early dining cars were famous all along the line for their excellent food and service.

It wasn't uncommon for family groups, dressed in their Sunday best, to take short round-trips so they could enjoy the luxury — and novelty — of an N&W diner. Drummers, fashionable in bowler hats and peg-topped trousers, even planned their sales trips to include as many dining car meals as possible.

The years between have brought many changes to the N&W's dining car service. Heavy wooden diners have long since been replaced by sleek steel and chrome "restaurants on wheels". Delicious meals are prepared in modern kitchens and passengers dine in air-conditioned comfort.

But one thing remains unchanged — the romance and satisfaction of eating in a diner. This is just as real as it was when the N&W's first cafe cars ran between Roanoke, Virginia, and Portsmouth, Ohio. Today, as then, "nothing could be finer..."



Fred Harvey

DINING SERVICE

• Santa Fe dining service, managed by Fred Harvey, has been maintained on a plane of unvarying excellence for over half a century.

On the Santa Fe, all through passenger trains which do not carry dining cars, stop at attractive dining stations located about 125 miles apart.

At these Santa Fe dining stations, table d'hote meals are served in the Lunch Room from 50c. to \$1.00; also a la carte meals at reasonable prices. Table d'hote meals only are served in the Dining-Rooms, breakfast 75c., luncheon \$1.00 and dinner \$1.00.

Santa Fe dining car meals are, in general, a la carte. There are these exceptions:

Dinner on The California Limited (Trains 3 and 4), and The Grand Canyon Limited (Trains 23 and 24), is either a la carte or table d'hote, as desired. Trains 23 and 24 also stop at dining stations for meals.

The Santa Fe operates the only through dining car service between Chicago and California.

On The Ranger, (Trains 5 and 6) between Chicago, Kansas City and Texas, table d'hote breakfasts are served at 65c. and 75c., luncheon at 90c., and dinner at \$1.25. Similar table d'hote meals are served on The Navajo (Train 9) and The Missionary (Train 22) between Chicago and Kansas City.

AIR-CONDITIONED DINING CARS

• Santa Fe-Fred Harvey dining cars are AIR-CONDITIONED. In addition there are AIR-CONDITIONED cafe-observation cars on Trains 23 and 24 between Kansas City and Tulsa, and on Trains 23 and 24, between Chicago and San Francisco.

LOW COST "CHALLENGER" MEALS

Twenty-five Cents—BREAKFAST
Bacon and Eggs, Fried, Boiled or Scrambled
Hot Rolls or Bread Coffee or Milk
Thirty Cents—LUNCHEON
Baked Chicken Pie Mashed Potatoes
New Garden Peas Bread and Butter
Coffee or Milk

Thirty-five Cents—DINNER
Roast Sirloin of Beef—Butter Noodles
Oven Browned Potatoes—Fresh Spinach
Bread and Butter—Coffee or Milk

Club Breakfast Suggestions
Choice of Fruit or Fruit Juice or
Cereal or Eggs. Choice of Rolls,
Toast or Muffins. Tea Cocoa
Coffee Milk

FIFTY CENTS
Choice of Fruit or Fruit
Juice or Cereal
Choice of one item:
Cereal with Cream
Griddle Cakes with
Maple Syrup
Salt Mackerel, Boiled
or Broiled
Rasher of Bacon,
One Egg
Two Eggs: Boiled,
Fried or Scrambled
Rolls Toast
Muffins Coffee
Milk Tea Cocoa

SIXTY-FIVE CENTS
CONTINENTAL DINNERS
De Luxe, French cuisine,
Served on the "400" and
the Streamliners, City of Los Angeles and City of Portland.

Nothing does quite so much to make travel pleasant as good meals, and when you're traveling on the North Western you look forward eagerly to your visits to the dining car. The food is always top-grade, tastefully prepared and attractively served. The sample menus shown below will give you an idea of the different types of meals served on North Western trains.

SAMPLE MENUS—Select Your Price Menu*

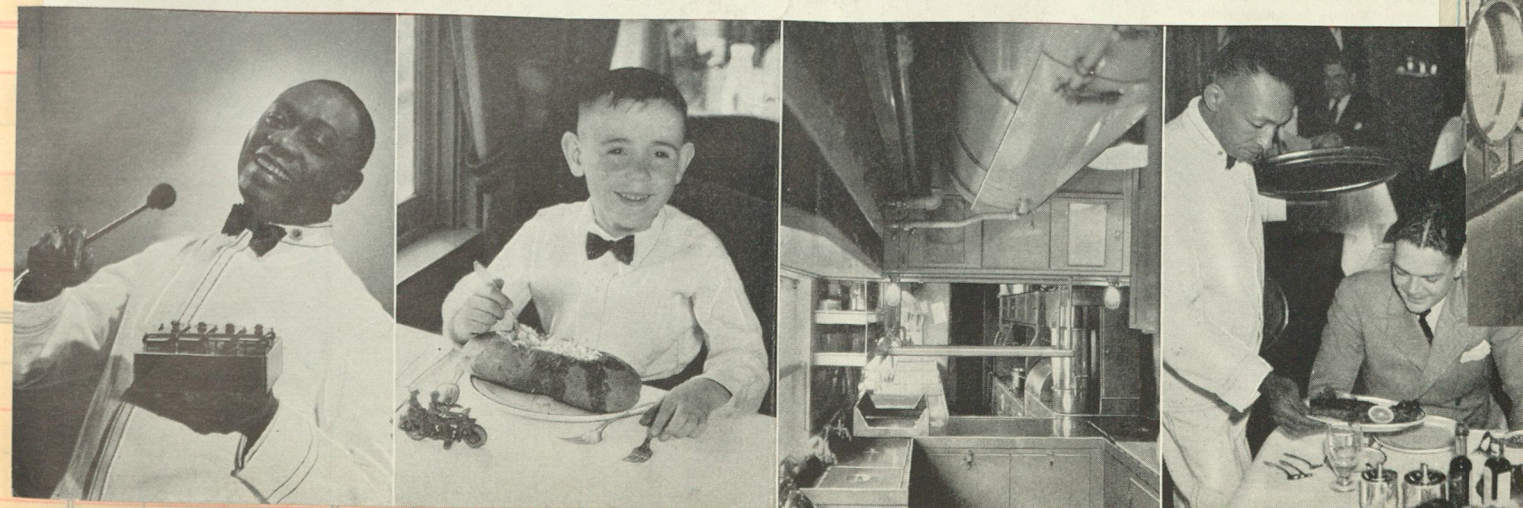
Following Entrees and Prices Include Soup, Potatoes, Vegetable, Salad, Bread and Butter, Dessert and Tea, Coffee or Milk

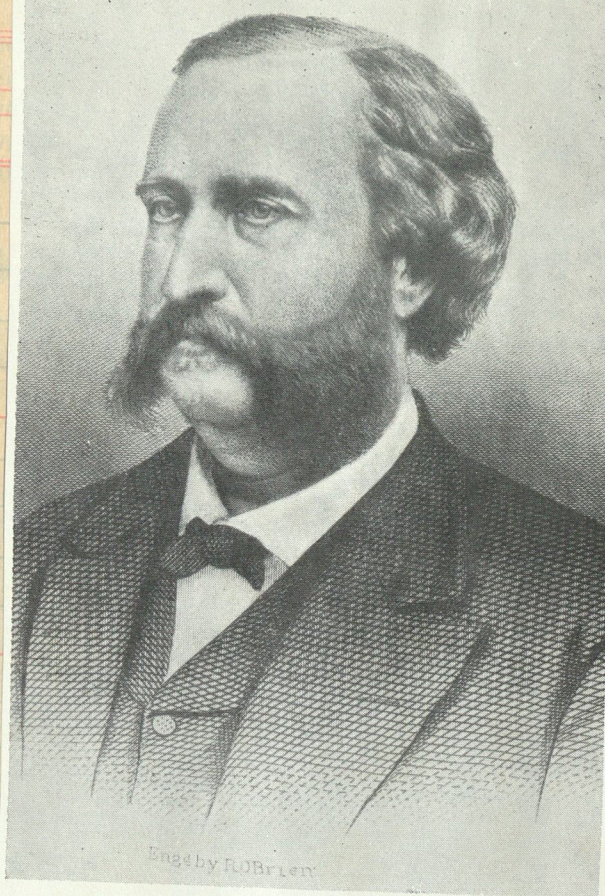
Cream of Fresh Asparagus Chilled Tomato Juice

Choice of:
Broiled Lake Michigan Trout, Maitre D'Hotel .90
Grilled Lamb Chops, Mint Jelly 1.10
Half Spring Chicken, Saute, Corn Fritter,
Cream Gravy 1.20
Roast Top Sirloin of Beef, Noodles .95
Creamed Spinach Omelette .75
French Fried Potatoes Asparagus, Drawn Butter
Lettuce and Hearts of Artichokes, French Dressing

Assorted Bread
Pineapple Sundae, Wafers
Peach Short Cake, Whipped Cream
Tea Coffee Milk

*As Served on Most North Western Trains.

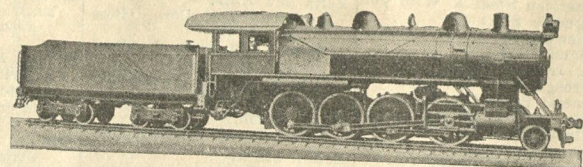




A REMEDY for the frequent telescope accidents was not found until 1869 when Ezra Miller patented his successful platform and buffer. The Miller Platform, which locked the cars together by strong compression, was a great improvement in safety because it reduced the threat of telescoping.

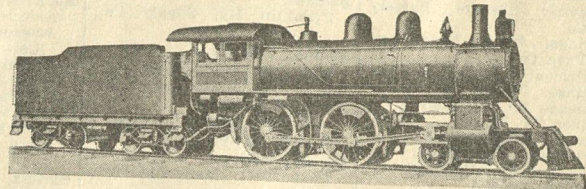
FOR SALE Repaired Locomotives

95 Ton Consolidations



Builder—American Locomotive Co.
Cylinders—21" x 30"—Drivers—44" Centers
Weight on drivers—170,000 lbs.—Boiler Pressure 185 lbs.

75 Ton—8-Wheel Passenger



Builder—American Locomotive Co.
Cylinders—19" x 26"—Drivers—66" Centers
Weight on drivers—102,300 lbs.—Boiler Pressure 200 lbs.

ALSO—65 TON—8-WHEEL PASSENGER
SIX-WHEEL SWITCHERS
WRITE FOR PRICES AND SPECIFICATIONS

H. KLEINHANS COMPANY
Union Trust Building Pittsburgh, Pa.

RyAGE

OCT 13, 1923.



Section of the New Haven's purchasing department.

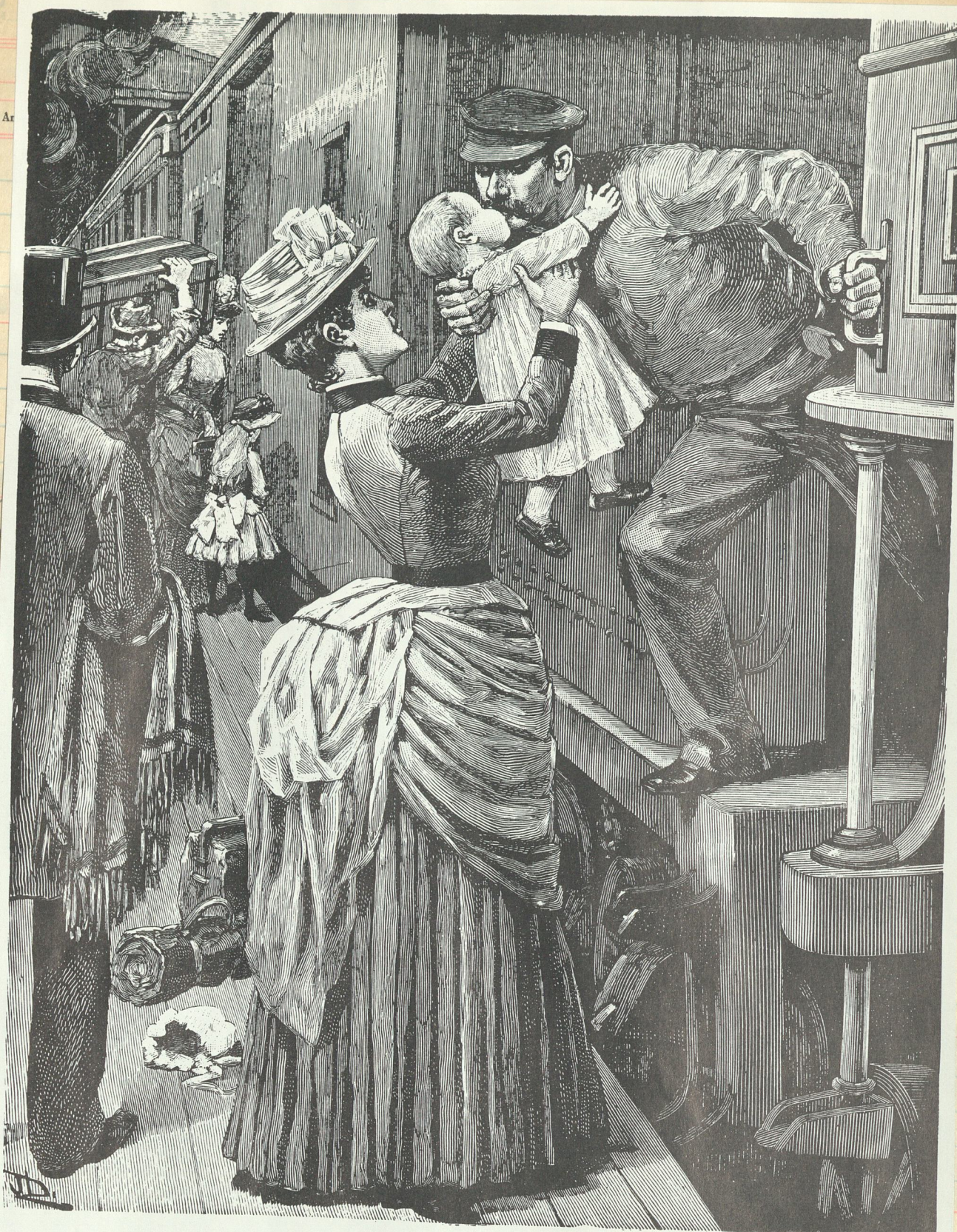
The railroad purchasing agent must buy everything from toothpicks to locomotives. Consider that the railroad runs large offices, a chain of moving restaurants, factories and shops as a means to its primary business of transportation, and you will see why the purchase of supplies and equipment is so important.

DR. GIESL OF THE GIESL EJECTOR



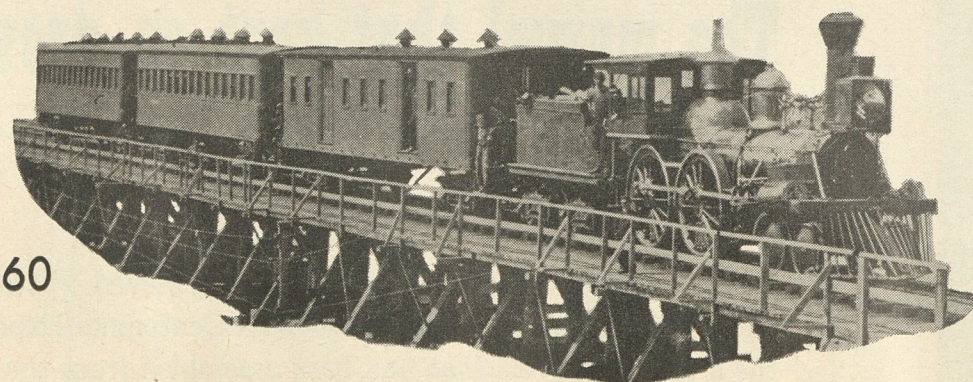
Simonis.

THE name of Dr. Adolph Giesl-Gieslingen will live in the steam locomotive record forever on the strength of his invention of the Giesl ejector. This small, inexpensive front-end device, externally characterized by a thin, oblong stack, reduces steam-chest back pressure and improves combustion air flow. Engines so equipped produce more power on less fuel, and make less noise and smoke (see "Which Twin Has the Giesl?" page 28, January 1968 TRAINS). The inventor was born in Trient, Austria, graduated from the Vienna University of Technology in 1925, and became a designer for the Vienna Locomotive Works that year. Though trained as an electrical engineer, Dr. Giesl became preoccupied with improving steam power, dividing his time between Europe and America in the 1930's. Ironically, his first oblong ejector was installed on a U.S. engine—Chesapeake & Ohio 0-8-0 191—though the device only found favor overseas. Dr. Giesl now writes articles and books, mostly on railroad matters. TRAINS is delighted to have him aboard.—D.P.M.



WRECKS WERE FREQUENT ON MID-CENTURY RAILROADS. What with bridge collapses, washouts, derailments, and collisions, death was a very real ponderable for the locomotive engineer. This tender scene illustrates a trainman's fond goodbye to his family.

Collection of the Library of Congress



1860



Copyright 1929 Owens-Illinois Glass Co.

L.I. Wreck Toll 29 Dead, 105 Hurt; Engineer Held; Inquiries Begin

FEB 17 1950



Salvage crews at work yesterday morning at the scene of the crash. Car on embankment at right was part of west-bound train

Head Cars of Trains Ripped Lengthwise

Rockville Centre Crash Laid to Human Failure; Both Engineers Survive

By Fendall Yerxa

Twenty-nine persons were counted dead yesterday and 105 injured in the collision of two Long Island Rail Road electric commuter trains at 10:35 Friday night at Rockville Centre, L. I.

State and Federal agencies prepared for an official inquiry into the disaster, one of the worst in history in the New York area. The engineer of one of the trains, charged by Nassau County authorities with running through a stop signal light, was arrested and charged with second degree manslaughter.

A formal hearing into the cause of the collision will be opened Wednesday at 9:30 a. m. at the Long Island Station, Jamaica, Queens, it was announced by Public Service Commissioner George A. Arkwright. The state Public Service Commission, Interstate Commerce Commission and the railroad will take part in the joint inquiry, the commissioner said.

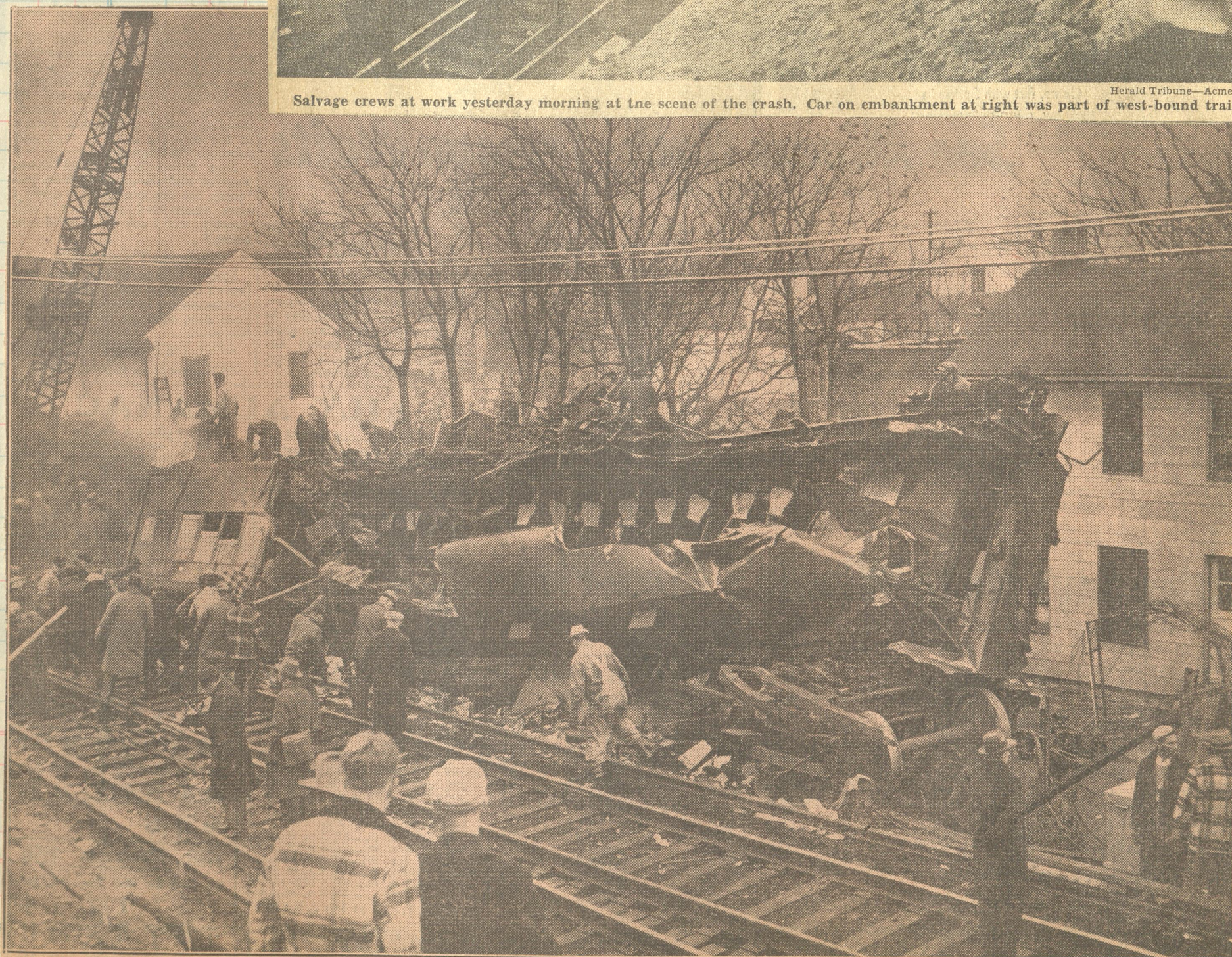
Engineer Held at Home

Nassau County authorities, who had priority in the criminal aspects of the case, placed Jacob Kiefer, fifty-five, veteran motor-man of the Long Island, under house arrest with a police guard at his home, 69 Church Street, Baldwin, L. I. Mr. Kiefer was the engineman of the eastbound twelve-car train which, according to Nassau District Attorney Frank Gulotta, ran through warning signals and knifed into a moving westbound passenger train near the Banks Avenue grade crossing on the western edge of Rockville Centre.

The lead cars of the two trains, one outbound from New York, and the other inbound from Babylon, L. I., sliced into each other at the western end of a temporary detour past a grade-elimination project.

The by-pass, known to railroad men as a "gantlet," is formed by the two rights-of-way merging by means of "frogs," or rail passover links, so that the two tracks straddle each other, leaving room for only one train to pass at a time. It was described by Commissioner Arkwright as a normal by-pass method, and had been in operation more than a year. The gantlet is protected at both ends by signal lights.

Had Been Thrown Clear



Disaster's Aftermath. Ripped open by the force of the crash, one of the Long Island Rail Road cars while figured in Friday night's tragedy is cleared from track to open the road to traffic again. Meanwhile, the death toll stood at 29 and scores were hospitalized as a result of the Rockville Centre collision. Engineer who passed red light is being held.

(NEWS photo by Bill Meurer)



The foreman signals the gang to move the rail to the left; the singer is at the right. Photo courtesy of Norfolk & Western Magazine.

Another billion dollar highway program



IN thinking about work after the war, don't overlook the 230,000 miles of steel "highways" which the railroads have built and maintain at their own expense. These "highways" provide jobs for more than a quarter of a million men working on construction and maintenance of tracks and roadway — jobs for more than a million other railroad workers — besides still other thousands in the mines, the mills and the forests where roadway materials and supplies are produced.

More than that—the railroads pay real taxes on these "highways," not for their own special benefit, but for the support of schools and other general services, including public highways and streets.

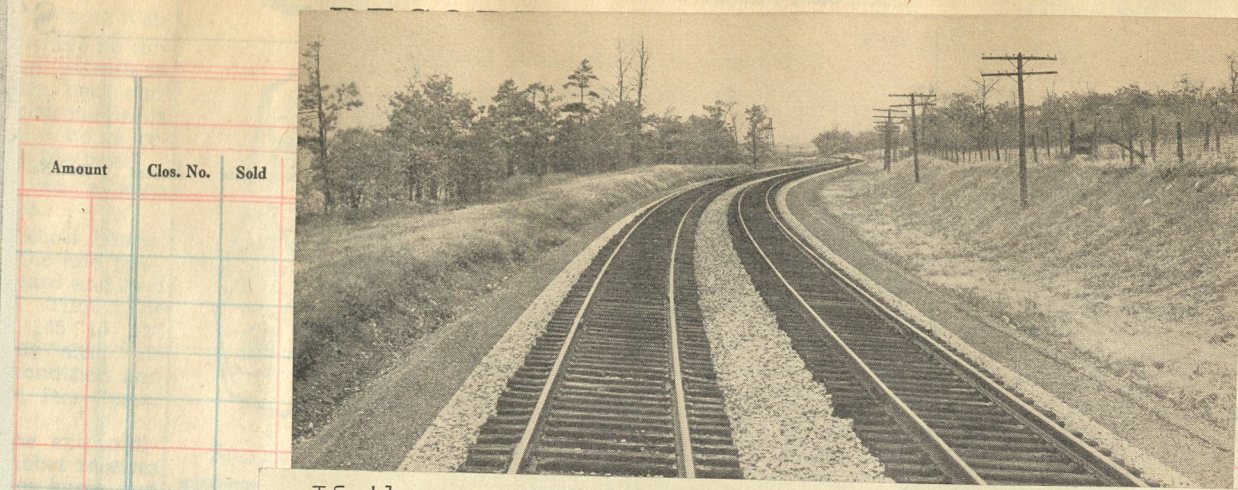
After the last war, between 1920 and

1930, the railroads spent more than four billion dollars for improvements on these "highways," and in addition more than three-and-a-half billion dollars for betterments in equipment. After this war, a similar program will be required.

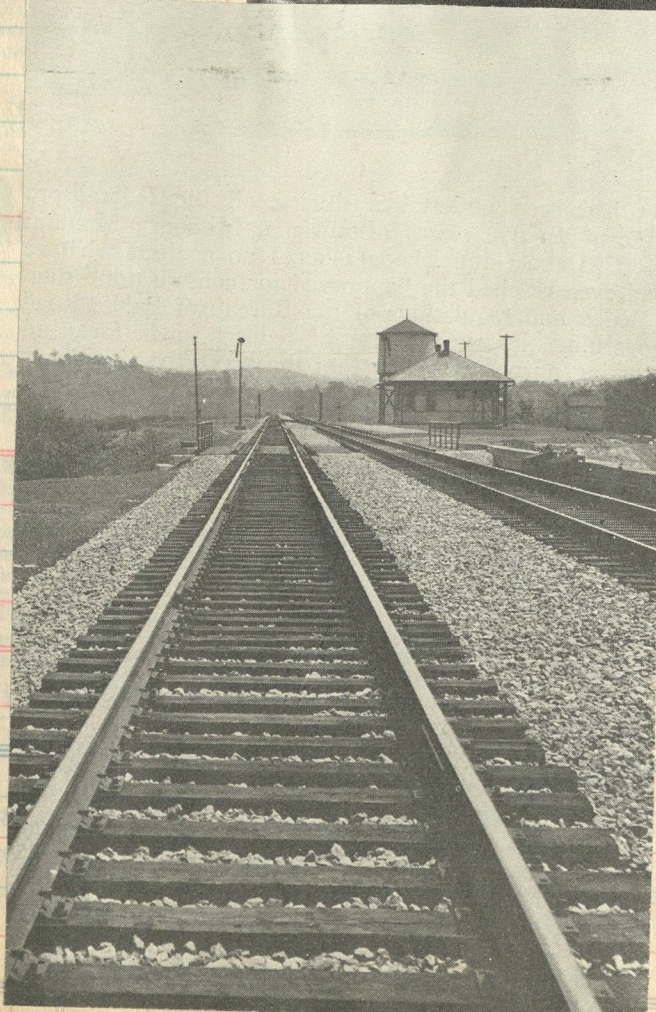
So there's another highway program which could make a lot of postwar jobs, and which needs no more than a public policy of treating all forms of commercial transportation alike — letting each one pay its own way, which includes the payment of the general taxes upon which governmental services depend.



ASSOCIATION OF
AMERICAN RAILROADS
All United for Victory



If there was a status symbol for a railroad it would have to be their trackage. Any road whose track was laid with heavy steel, well lined on dressed rock ballast were always ready to point out this fact to passengers and also shippers. To the railroad such trackage was a necessity, but, it also made good advertising copy.



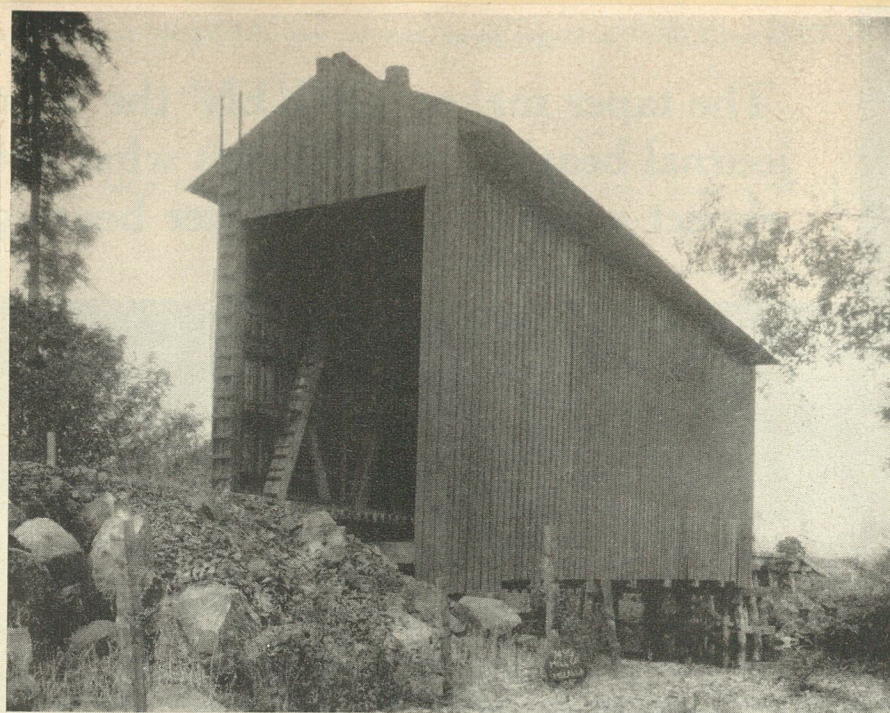
Clos. No. Sold

blt 1877



SPANNING ROCKS AND WATER of Contoocook River is Town truss bridge on Boston & Maine at Bennington, N. H.

Glenn A. Wagner.



A WOODEN COVERED BRIDGE, one of a dying race, spans Mill Creek on Espee's Portland Division.

Espee covered bridge

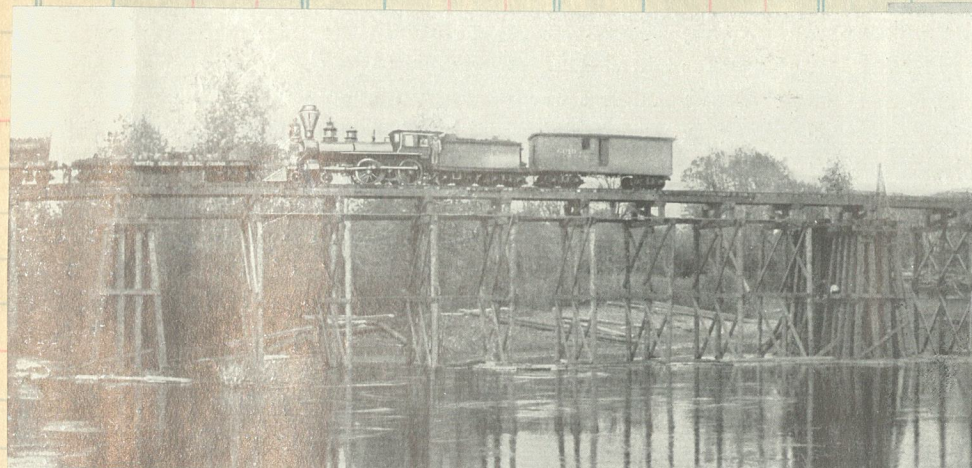
One of the historical-minded men in the general office of the Southern Pacific called my attention to a photograph of a covered bridge over Mill Creek still in service on the Molalla Branch of the Portland Division of Espee.

The bridge, a timber structure, is covered to protect it from the weather. Up there the weather is often full of what is described as Oregon mist, but apparently the photographer who took this picture had an Oregon-mist filter on his camera.

Dick Houghton.

933 Holly Rd., Belmont, Calif.

The first iron railroad bridge in the United States is believed to have been built for the Reading Railroad in 1845. In 1846-47 a boiler-plate tubular girder, 55 feet in length, was built at Bolton, Maryland, for the Baltimore & Ohio Railroad, and an iron Howe truss bridge, with 30-ft. spans, was built near Pittsfield, Mass., for the Boston & Albany Railroad (now the New York Central). The first all-steel railway bridge was a 2,700-ft. structure completed at Glasgow, Missouri, in 1879, for the Chicago & Alton Railroad.



AN EARLY LOCOMOTIVE AND ROLLING STOCK, SHOWING CHEAP TIMBER TRESTLE CONSTRUCTION.

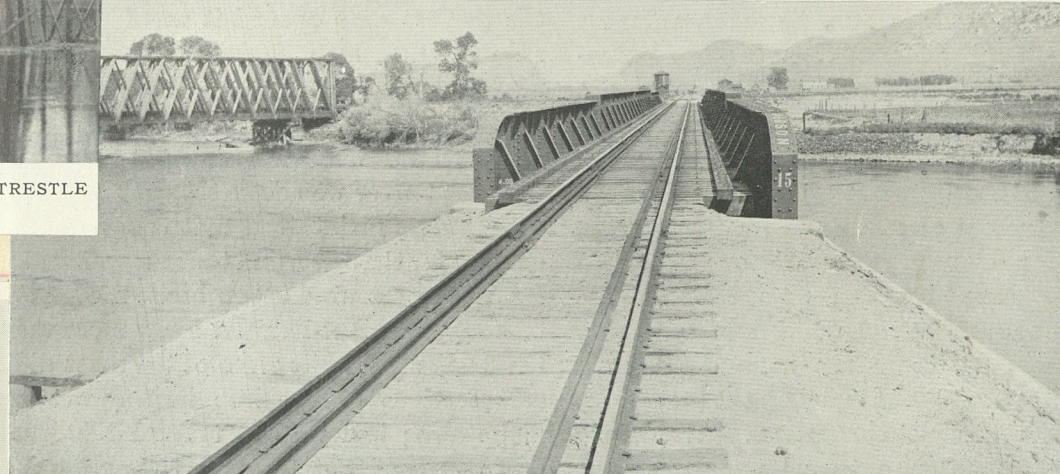
WORKS AT PATERSON, N. J. **Passaic Rolling Mill Co.** NEW YORK OFFICE: Room 46 Astor House

BRIDGE BUILDERS.

WROUGHT IRON RAILROAD AND HIGHWAY BRIDGES, TURN TABLES AND ROOFS,

all made from the best material of own manufacture. Manufacturers of all kinds of Iron and Iron work for Bridges and Buildings. Plans and Estimates furnished.

WATTS COOKE, President. W. O. FAYERWEATHER, Treasurer. C. A. MARSHALL, Engineer.



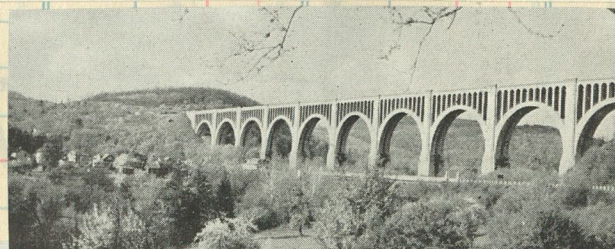
THE OLD AND THE NEW, NEAR LAPPINGTON.

To the left is the original bridge built of wood. The old line was abandoned when the new, straight and more level track was finished.



The Chicago and North Western Railway Bridge Across the Wisconsin River at Merrimac, Wiscons

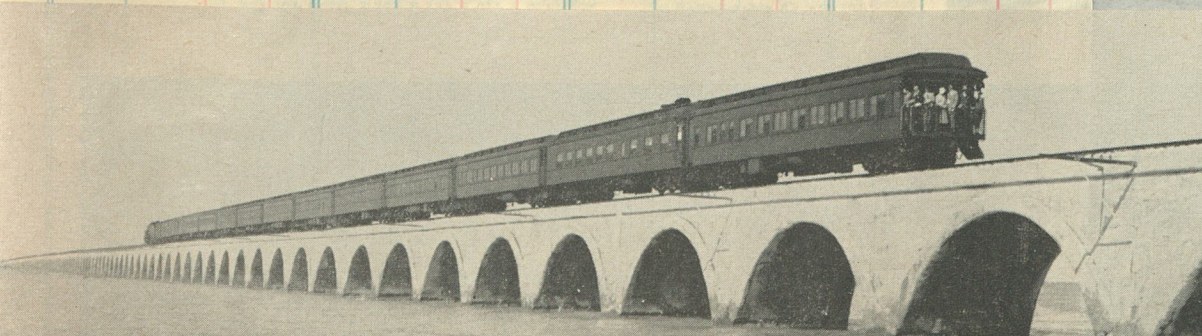
The photograph was probably taken in 1879, when the bridge was completed. A modern structure now spans the



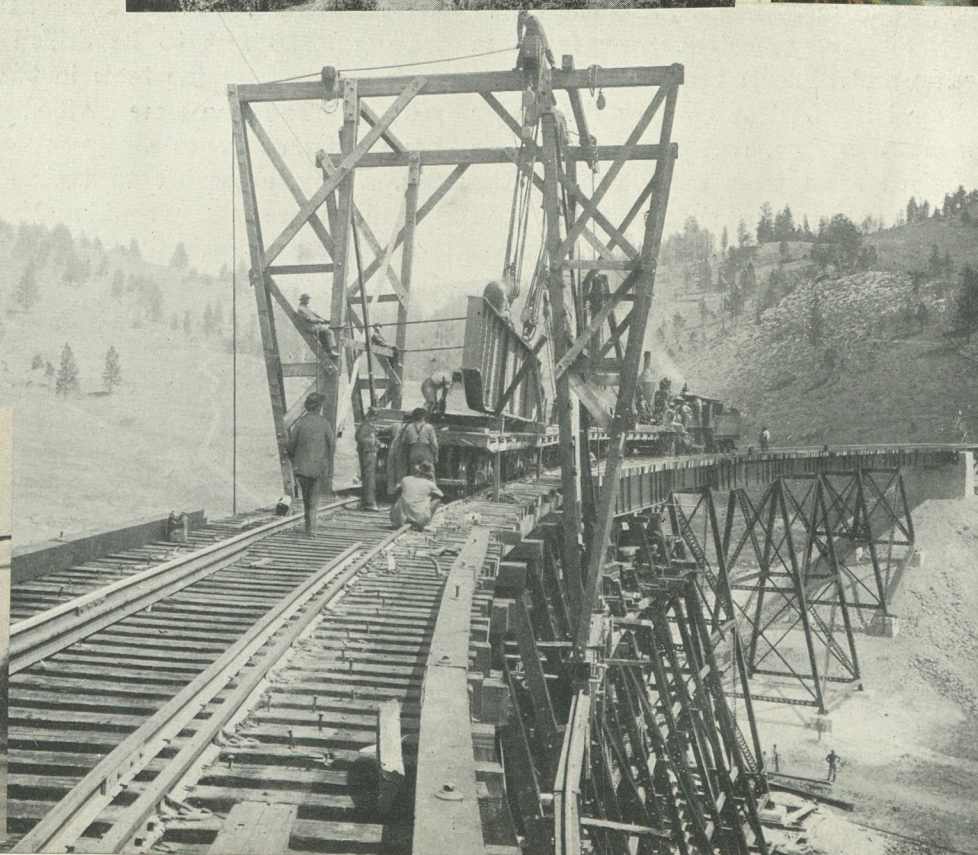
HOW many railroad bridges are there in the United States?

On the 235,000 miles of U. S. rail lines, there are 192,000 bridge structures—an average of one bridge per every mile-and-a-quarter of line—and three times as many culverts. Nearly 4000 miles of track are laid not on solid ground, but on bridges carried above the surface. Laid end to end this bridgework would stretch from New York to London, with mileage to spare. Even the Central of Georgia's Macon-Atlanta line, which follows the ridge between the waters of three rivers for 103 miles and nowhere crosses a stream, has bridges which carry its tracks above roads and streets.

Below, the westbound train makes a runby at the L&N's Bay St. Louis bridge. The bridge is a two-mile-long pre-stressed concrete structure completed in 1967 and is the longest of its kind in the world.

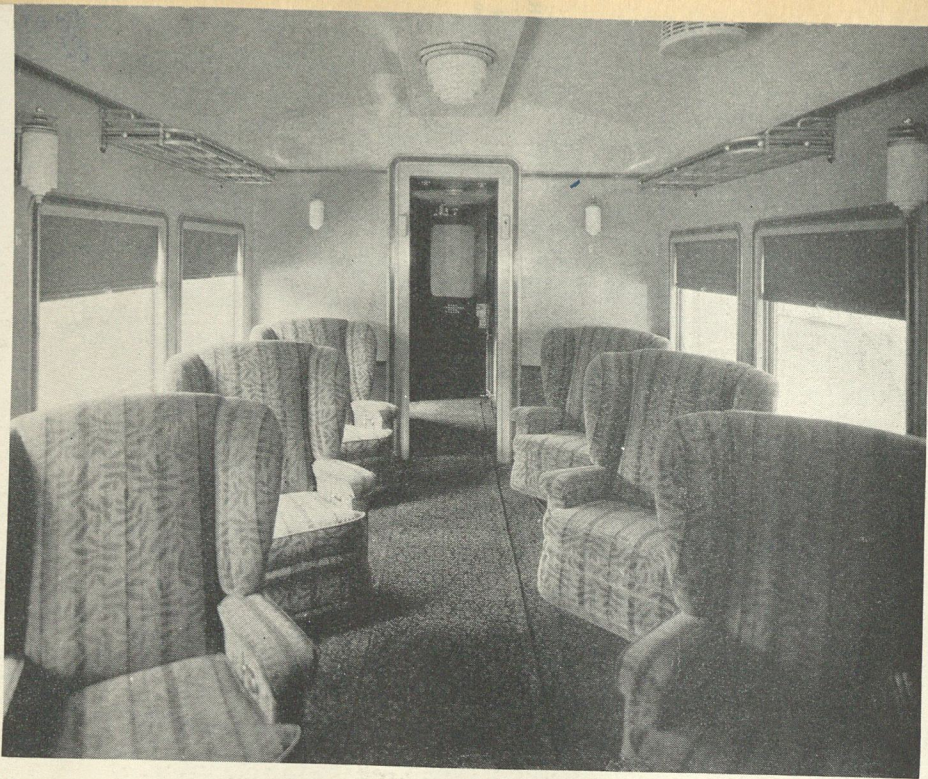


Going to sea by train--Long Key Viaduct--Florida East Coast



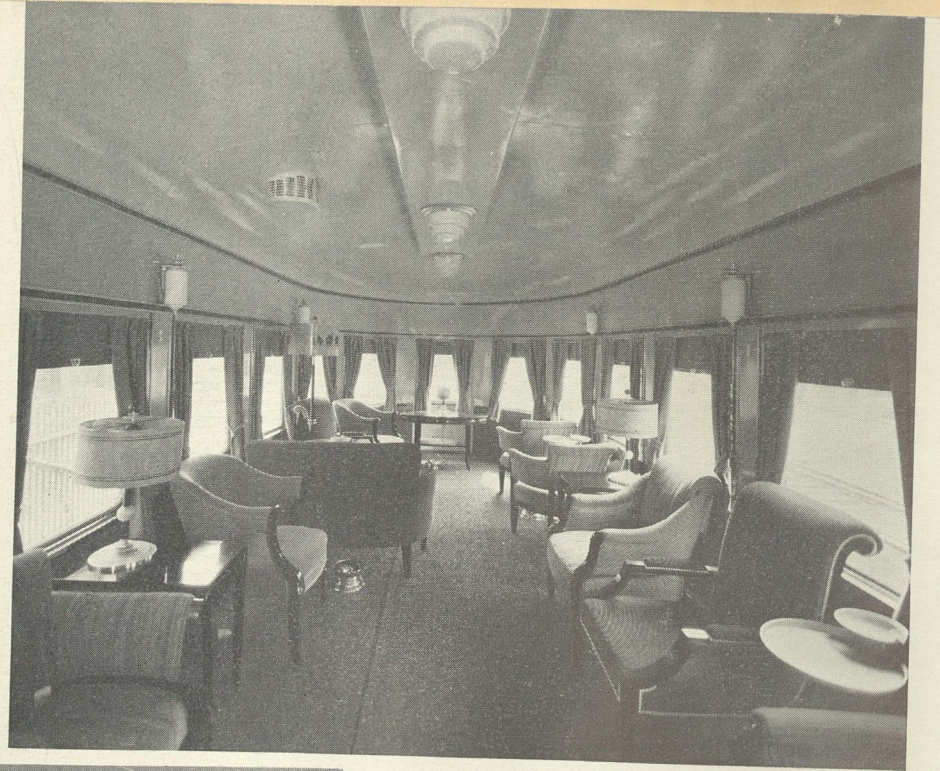
REBUILDING IN STEEL THE OLD TIMBER TRESTLE ACROSS GREENHORN GULCH IN THE ROCKY MOUNTAINS.

Lowering a 61 foot girder from the cars.



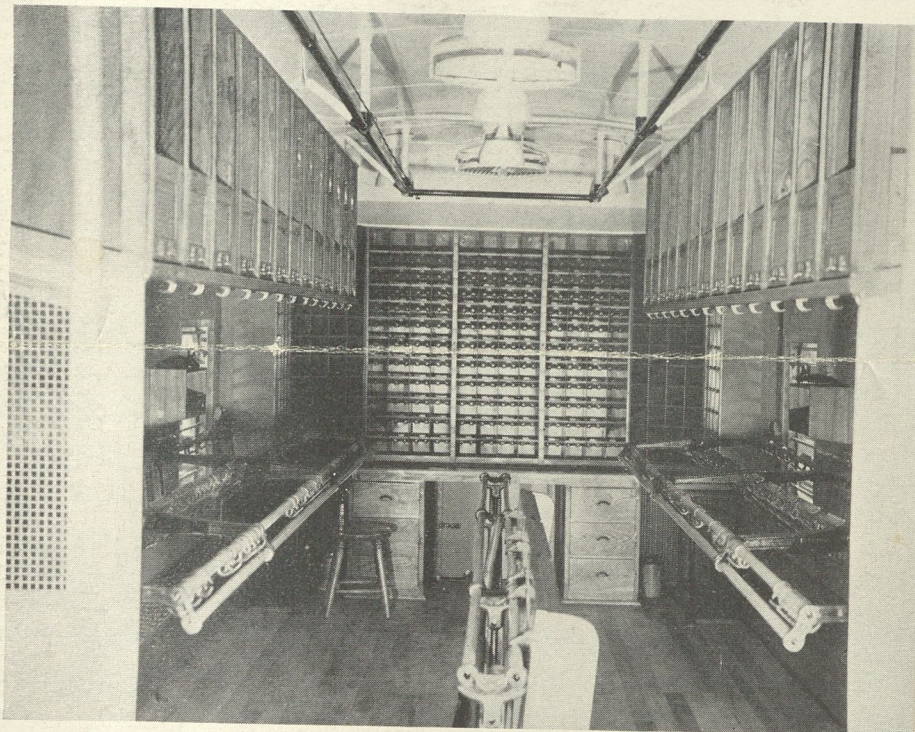
Two trains, of eight cars each, built in 1937 by the American Car & Foundry for the Baltimore & Ohio's "Royal Blue".

The seats in the parlor cars are of an entirely novel design, nothing lacking in beauty or comfort. They are arranged to revolve and the reclining backs can be adjusted to any desired position. Each Parlor Car has its individual smoking compartment furnished with five movable chairs.

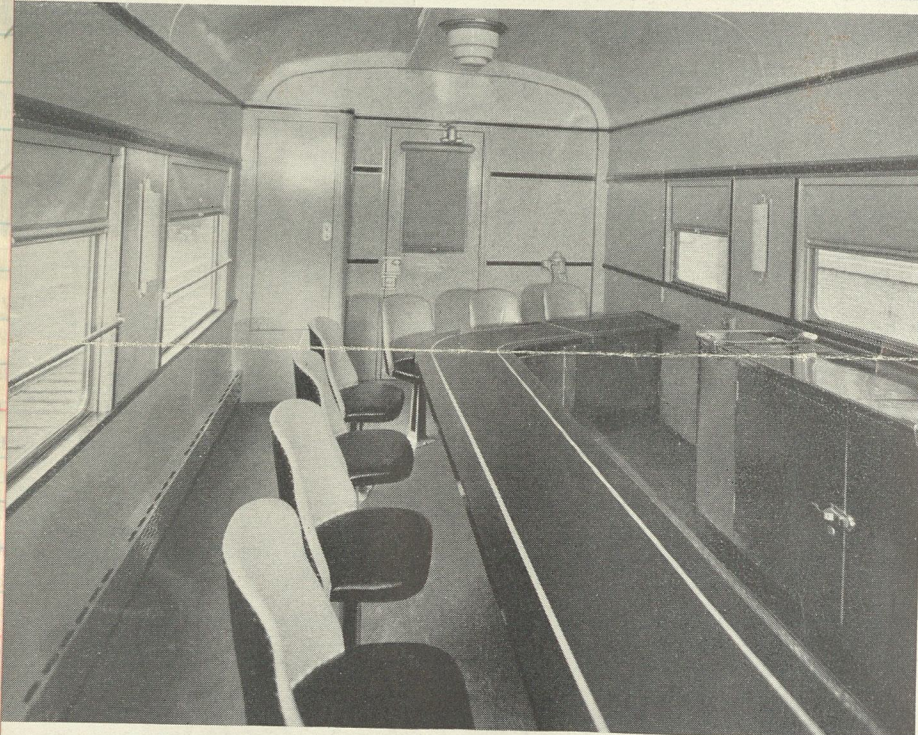


Furnished with the informal charm of a country house living room, and giving an unbroken view in every direction, this dust-proof, air-conditioned Observation Car attains the pinnacle of luxury in travel.

From an operating standpoint they present the great advantage of strength combined with lightness. With structural strength fully as great, if not greater, they weigh some 40% less than the cars they replace. Fully air-conditioned, completely dust-proof and largely noise-proof, mounted on roller bearings, they set a new standard of passenger appeal.



In the forward end of the Baggage Car is a completely equipped Railway Post Office furnished with the most approved devices for the prompt and efficient handling of mail.

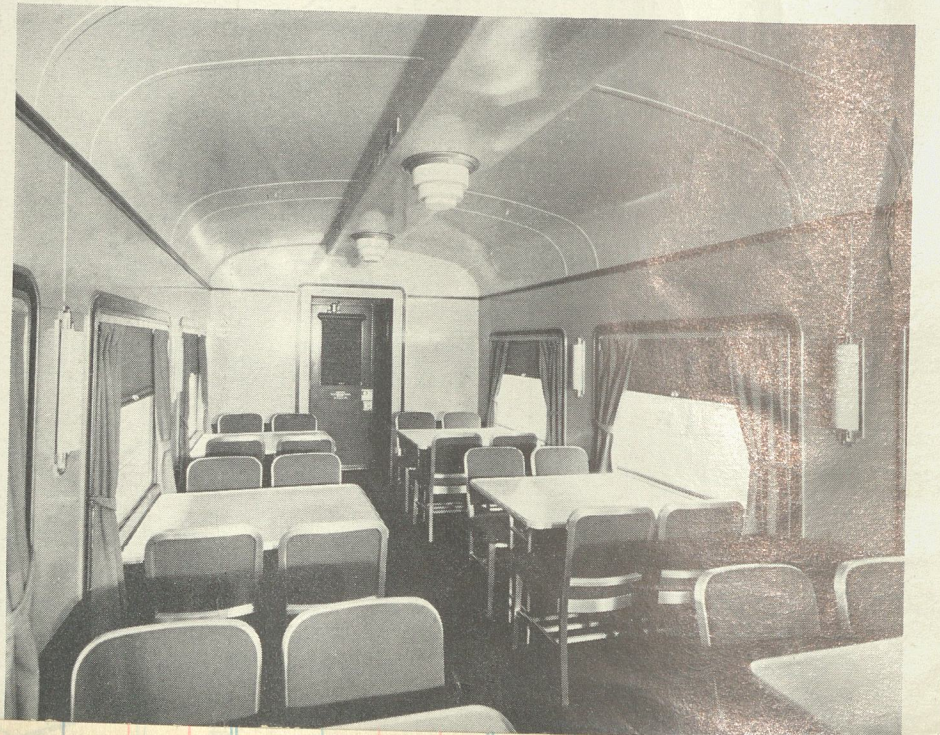


These new railroad cars, built by American Car and Foundry Company for the Baltimore & Ohio Railroad, constitute the most important contribution yet made to the cause of safer, more comfortable, more convenient travel. Here, for the first time, are light-weight cars of the full standard size, fabricated from high-strength alloys of steel and aluminum.



The interior decorative motif of these luxurious coaches is no less attractive than that of the Dining, Parlor and Observation Cars and, furnished with the new A.C.F. reclining back, rotating seats, the atmosphere is so different from that in day coaches in vogue today that they might well be considered a new type.

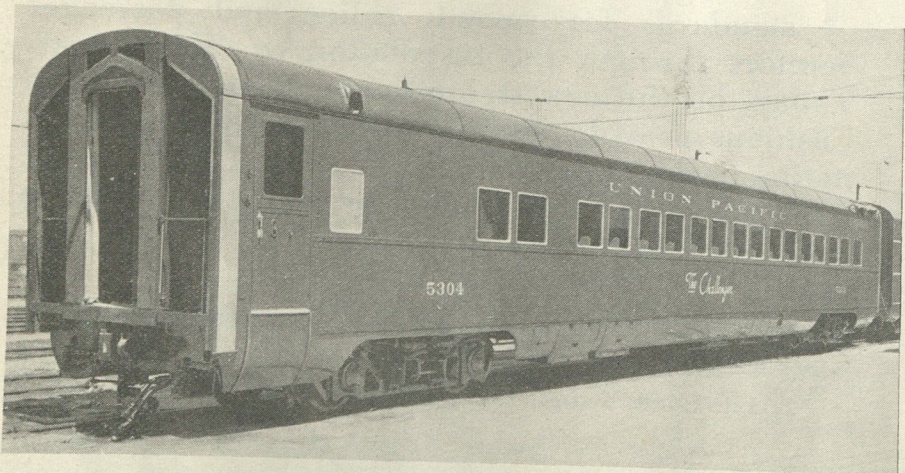
For quick and economical service a section of the Dining Car is fitted with a lunch counter. This is supplied from the main kitchen, but has its own facilities for ready service.



The Dining Car is laid out with its kitchen in the center. This makes for quicker, easier service cutting by half the distance a waiter travels to his table.

1939

UNION PACIFIC PASSENGER CARS



are equipped with

SAFETY POWER PLANTS

SAFETY V-BELT AND GEAR DRIVE

CARRIER-SAFETY STEAM EJECTOR AIR CONDITIONING

SAFETY LIGHTING FIXTURES

THE SAFETY CAR HEATING AND LIGHTING COMPANY

NEW YORK

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PHILADELPHIA

BOSTON

ST. LOUIS

SAN FRANCISCO

MONTREAL



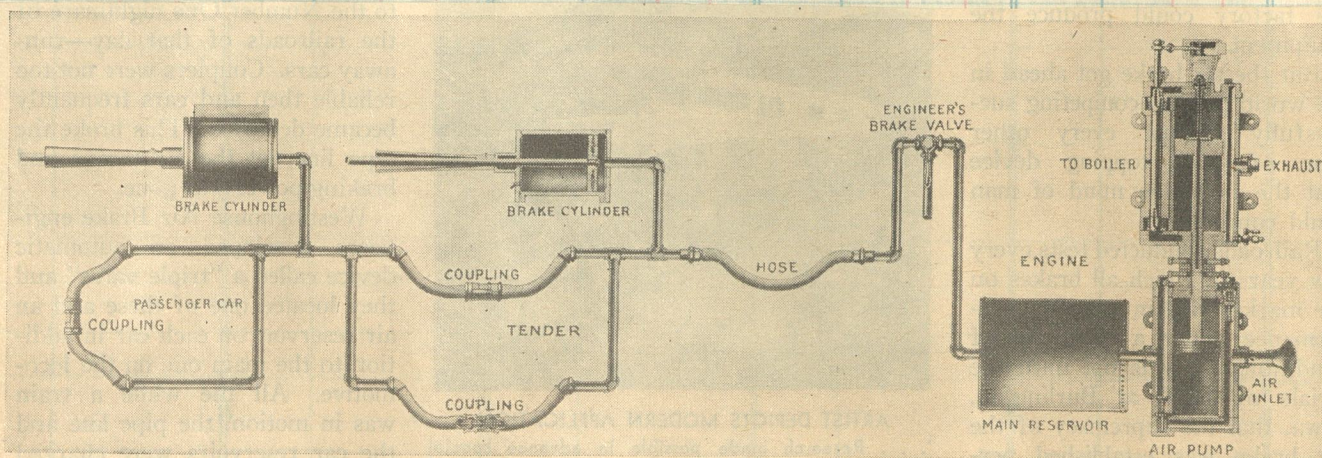
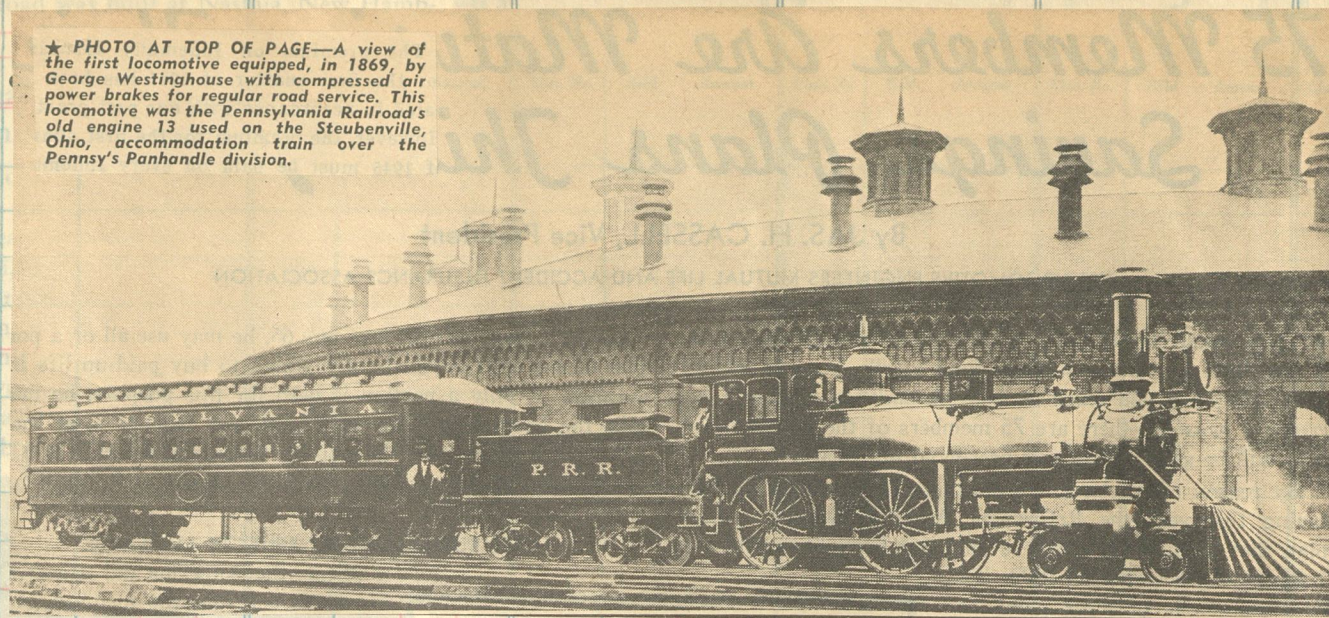
Many Passenger Cars Were Modernized During the Year—an Illinois Central Modernized Lounge Car



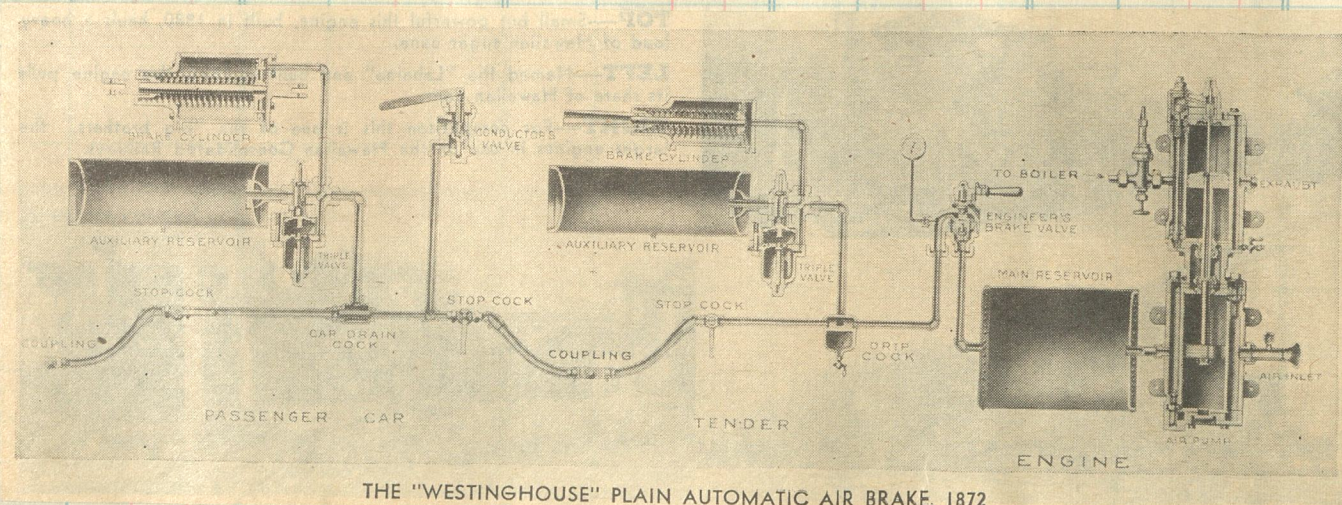
MODERN AIR-CONDITIONED COACHES

Clos. No. Sold Amount

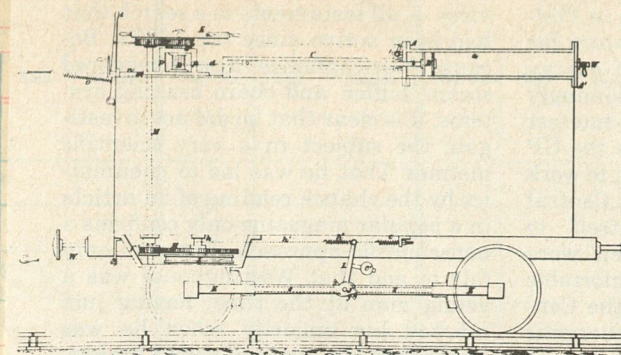
★ PHOTO AT TOP OF PAGE—A view of the first locomotive equipped, in 1869, by George Westinghouse with compressed air power brakes for regular road service. This locomotive was the Pennsylvania Railroad's old engine 13 used on the Steubenville, Ohio, accommodation train over the Pennsy's Panhandle division.



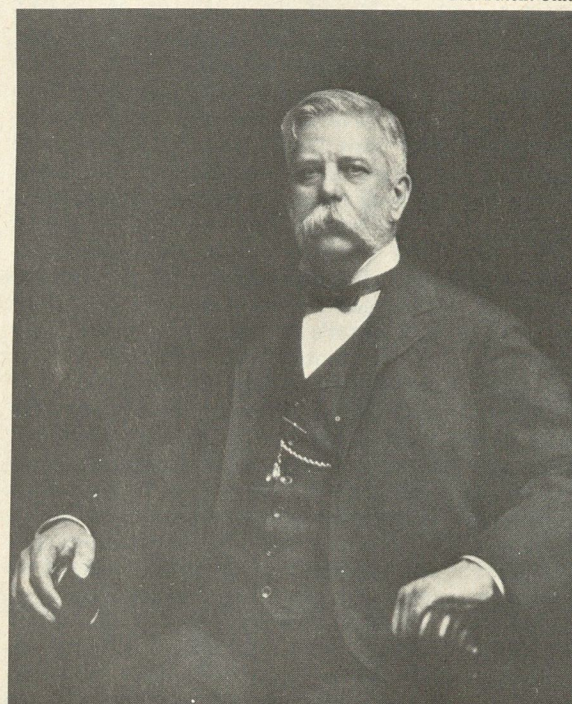
THE "WESTINGHOUSE" SYSTEM NON-AUTOMATIC BRAKE, 1869, COMMONLY KNOWN AS THE "STRAIGHT AIR" BRAKE



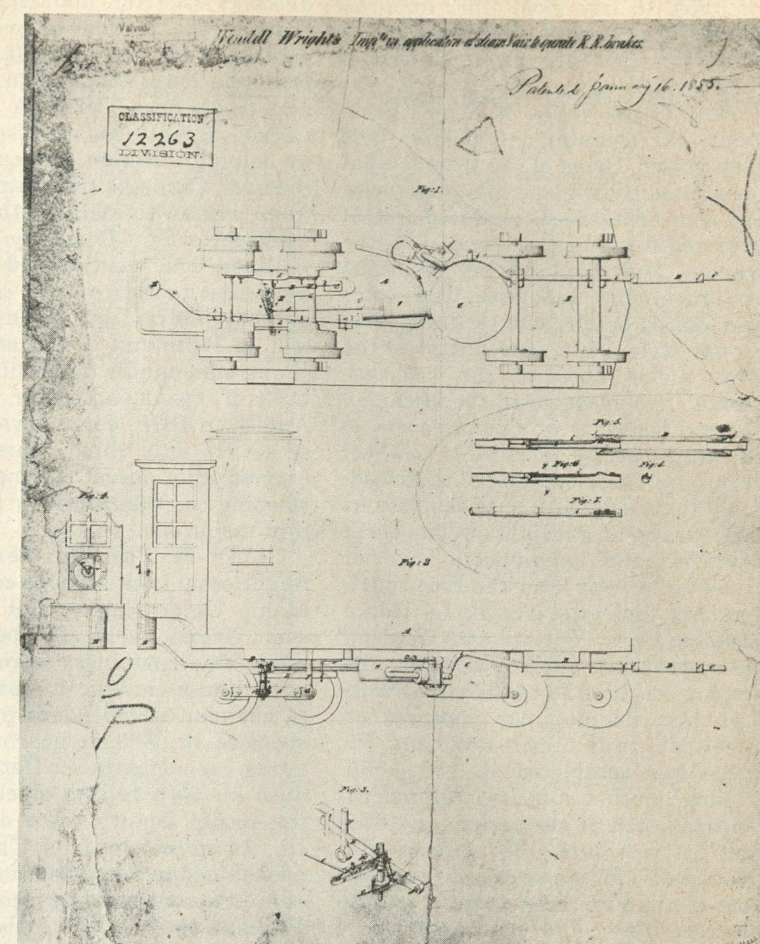
THE "WESTINGHOUSE" PLAIN AUTOMATIC AIR BRAKE, 1872



U.S. Patent Office.

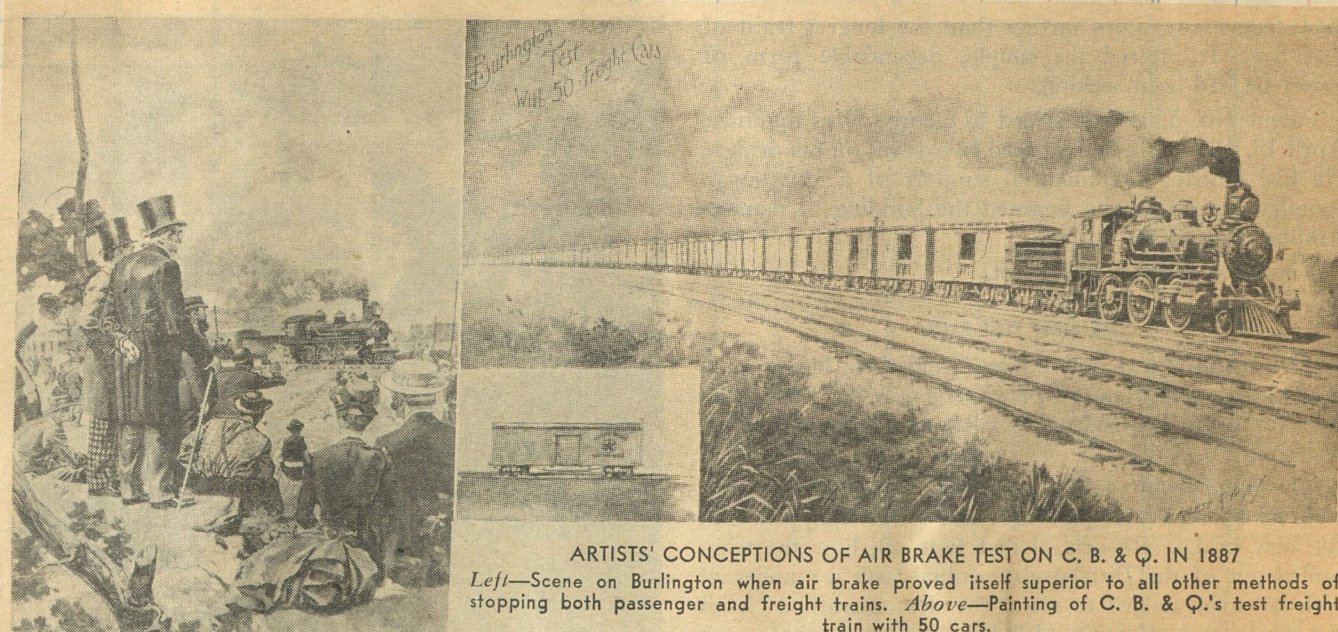


WABCO.



U.S. Patent Office.

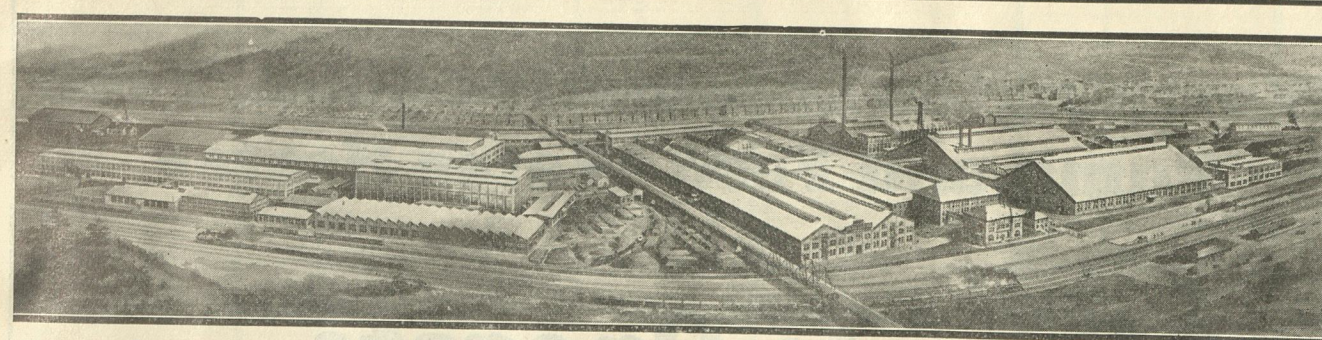
GEORGE WESTINGHOUSE is universally credited with the invention of the air brake, yet several mechanics experimented with such gear decades before he received his first patent in 1869. Dalrymple Crawford's patent brake of 1845 (upper left) could be manually or pneumatically operated. Wendell Wright's 1855 patent (above) incorporated a cab-forward location for the brake valve.



November 10, 1923

RAILWAY AGE

41

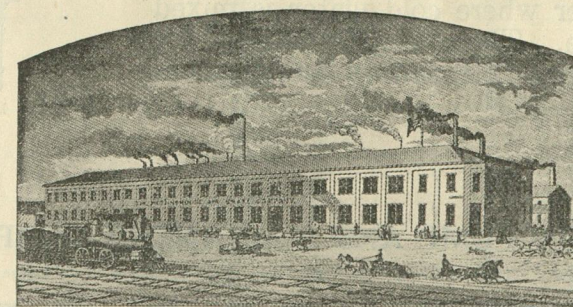
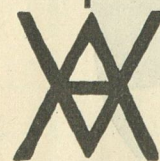


"Home of the Air Brake," Wilmerding, Pa.

Completing 54 Years of Service

THE Westinghouse Air Brake Company is celebrating its 54th anniversary as a business organization devoted to the design and manufacture of Railway Air Brake Equipment.

The steady growth that has been experienced is the result of a constant endeavor to work in close co-operation with the railroads in providing whatever type of brake was best adapted to conditions; and it is needless to say that this traditional Westinghouse policy will continue to prevail.



Air Brake Plant in 1870

WESTINGHOUSE AIR BRAKE

General Offices and Works, Wilmerding, Pa.

New York

Washington

Chicago

St. Louis

S.

438. What is the story of the air brake?

Various types of train brakes, all unsatisfactory, were employed during the early days of railroad-ing. Prior to the straight air brake invented in 1868 by George Westinghouse, more than 300 patents had been issued in the United States for railway brakes, only one of which was operated by air. The original Westinghouse brake patented April 13, 1869, was far from satisfactory. In 1870, the Master Car Builders' Association (now the Mechanical Division of the Association of American Railroads) began a series of air brake tests which have continued to this day. In 1872, Westinghouse developed an automatic triple-valve air brake which was a decided improvement over his previous patent. During the next several years numerous brakes were patented and tested, but none equaled in efficiency the Westinghouse automatic brake. By 1884 nearly all passenger cars in the United States were equipped with Westinghouse brakes, but the problem of developing an efficient brake for freight trains was more difficult. The superiority of the automatic air brake over other types was demonstrated in the "Burlington Railroad Trials" in 1886. A year later Westinghouse's improved triple-valve automatic air brake proved its superiority in freight service, and from that time forward its adoption was rapid. A railroad laboratory for air brake tests was established at Altoona, Pa., in 1893; two years later it was transferred to Purdue University, where it is still in operation. Numerous improvements have resulted from these and other tests. Road tests during 1929 to 1931 led to the adoption of the modern "AB" air brake, now widely used in freight service.

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ROBERT S. HENRY, Assistant to President.
C. S. DUNCAN, Economist.
R. V. FLETCHER, Vice-President and General Counsel (Law Department).
J. CARTER FORT, General Counsel.
J. M. SOUBY, Assistant General Counsel.
General Offices—Transportation Building, Washington, D.C.
Chicago Office—59 East Van Buren Street.

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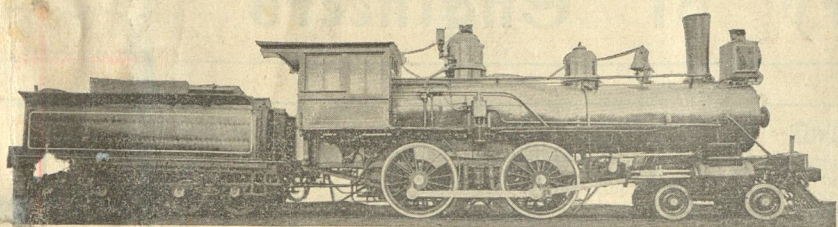
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Association of American Railroads continued on following pages.



By 1913 most Class I road main lines were laid with 90 lb rail which would put the cost per mile at about \$10,000.00 as against the figure of over \$42,000.00 a mile in 1949. It is interesting to note the wide variance in labor costs—\$1,000.00 in 1913 rose to \$10,000.00 in 1949.

APPROXIMATE COST OF ONE MILE OF SINGLE TRACK 1913

Weight of Rails in Lbs.	Weight Per Mile and Price of Rails	Pounds and Price of Spikes Per Mile	Price of 357 Splice Joints, Per Mile	Price of 2640 Cross Ties, Per Mile	Grading and Laying Track	Total Cost Per Mile
16	25,240 Tons (a) \$30=\$ 754.29 (a) \$35=\$ 880.00 (a) \$40=\$1005.27	1700 Lbs. 3 1/2 x 3/8	(a) 2 1/2 c=\$ 42.50 (a) 2 3/4 c=\$ 46.75 (a) 3 c=\$ 51.00	(a) 22c=\$ 78.54 (a) 25c=\$ 89.25 (a) 27c=\$ 96.39	(a) 15c=\$ 396.00 (a) 20c=\$ 528.00 (a) 25c=\$ 660.00	\$1571.39 \$2044.00 \$2512.66
20	31,240 Tons (a) \$30=\$ 942.84 (a) \$35=\$1097.84 (a) \$40=\$1252.84	2700 Lbs. 4 x 7/8	(a) 2 1/2 c=\$ 64.80 (a) 2 3/4 c=\$ 70.20 (a) 3 c=\$ 78.30	(a) 27c=\$ 96.39 (a) 30c=\$107.10 (a) 33c=\$117.81	(a) 15c=\$ 396.00 (a) 20c=\$ 528.00 (a) 25c=\$ 660.00	\$1800.03 \$2303.14 \$2808.95
25	39,240 Tons (a) \$30=\$1178.57 (a) \$35=\$1375.00 (a) \$40=\$1571.43	3500 Lbs. 4 x 1 1/2	(a) 2 1/2 c=\$ 84.00 (a) 2 3/4 c=\$ 91.00 (a) 3 c=\$101.50	(a) 32c=\$114.24 (a) 35c=\$124.95 (a) 38c=\$135.66	(a) 20c=\$ 528.00 (a) 25c=\$ 660.00 (a) 30c=\$ 792.00	\$2304.81 \$2850.95 \$3400.59
30	47,240 Tons (a) \$30=\$1414.28 (a) \$35=\$1650.00 (a) \$40=\$1885.71	3950 Lbs. 4 1/2 x 1 1/2	(a) 2 3/8 c=\$ 92.82 (a) 2 3/4 c=\$100.72 (a) 2 3/8 c=\$112.57	(a) 37c=\$132.09 (a) 40c=\$142.80 (a) 43c=\$153.81	(a) 20c=\$ 528.00 (a) 25c=\$ 660.00 (a) 30c=\$ 792.00	\$2567.19 \$3153.52 \$3743.79
35	55 Tons (a) \$30=\$1650.00 (a) \$35=\$1925.00 (a) \$40=\$2200.00	3950 Lbs. 4 1/2 x 1 1/2	(a) 2 3/8 c=\$ 92.82 (a) 2 3/4 c=\$100.72 (a) 2 3/8 c=\$112.57	(a) 42c=\$149.94 (a) 45c=\$160.65 (a) 48c=\$171.36	(a) 25c=\$ 660.00 (a) 30c=\$ 792.00 (a) 35c=\$ 924.00	\$2920.76 \$3446.37 \$4075.93
40	62,240 Tons (a) \$30=\$1885.71 (a) \$35=\$2200.00 (a) \$40=\$2514.28	4200 Lbs. 5 x 1 1/2	(a) 2 3/4 c=\$ 94.50 (a) 2 3/8 c=\$100.80 (a) 2 3/4 c=\$109.20	(a) 45c=\$160.65 (a) 50c=\$178.50 (a) 55c=\$196.35	(a) 25c=\$ 660.00 (a) 30c=\$ 792.00 (a) 35c=\$ 924.00	\$3300.86 \$3971.30 \$4743.83
45	70,240 Tons (a) \$30=\$2121.43 (a) \$35=\$2475.00 (a) \$40=\$2828.57	5215 Lbs. 5 x 1 1/2	(a) 2 3/8 c=\$ 92.82 (a) 2 3/4 c=\$100.72 (a) 2 3/8 c=\$112.57	(a) 50c=\$178.50 (a) 60c=\$214.20 (a) 70c=\$249.90	(a) 30c=\$ 924.00 (a) 35c=\$ 1068.00 (a) 40c=\$ 1188.00	\$3709.27 \$4435.75 \$5399.43
50	78,240 Tons (a) \$30=\$2357.14 (a) \$35=\$2749.99 (a) \$40=\$3142.80	5880 Lbs. 5 1/2 x 1 1/2	(a) 2 3/8 c=\$129.30 (a) 2 3/4 c=\$132.30 (a) 2 3/8 c=\$141.12	(a) 50c=\$178.50 (a) 60c=\$214.20 (a) 70c=\$249.90	(a) 30c=\$ 924.00 (a) 35c=\$ 1068.00 (a) 40c=\$ 1188.00	\$3994.76 \$4720.45 \$5721.82

The above table is based on Rails of 30 foot length, which are usually sold 90 per cent. long; the number of Splice Joints (complete with 2 Bars, 4 Bolts and Nuts), is figured accordingly; Cross Ties (2640 per mile) are spaced 2 foot, center to center; the weight of Spikes is estimated at 4 Spikes per tie.

Washington, D.C.

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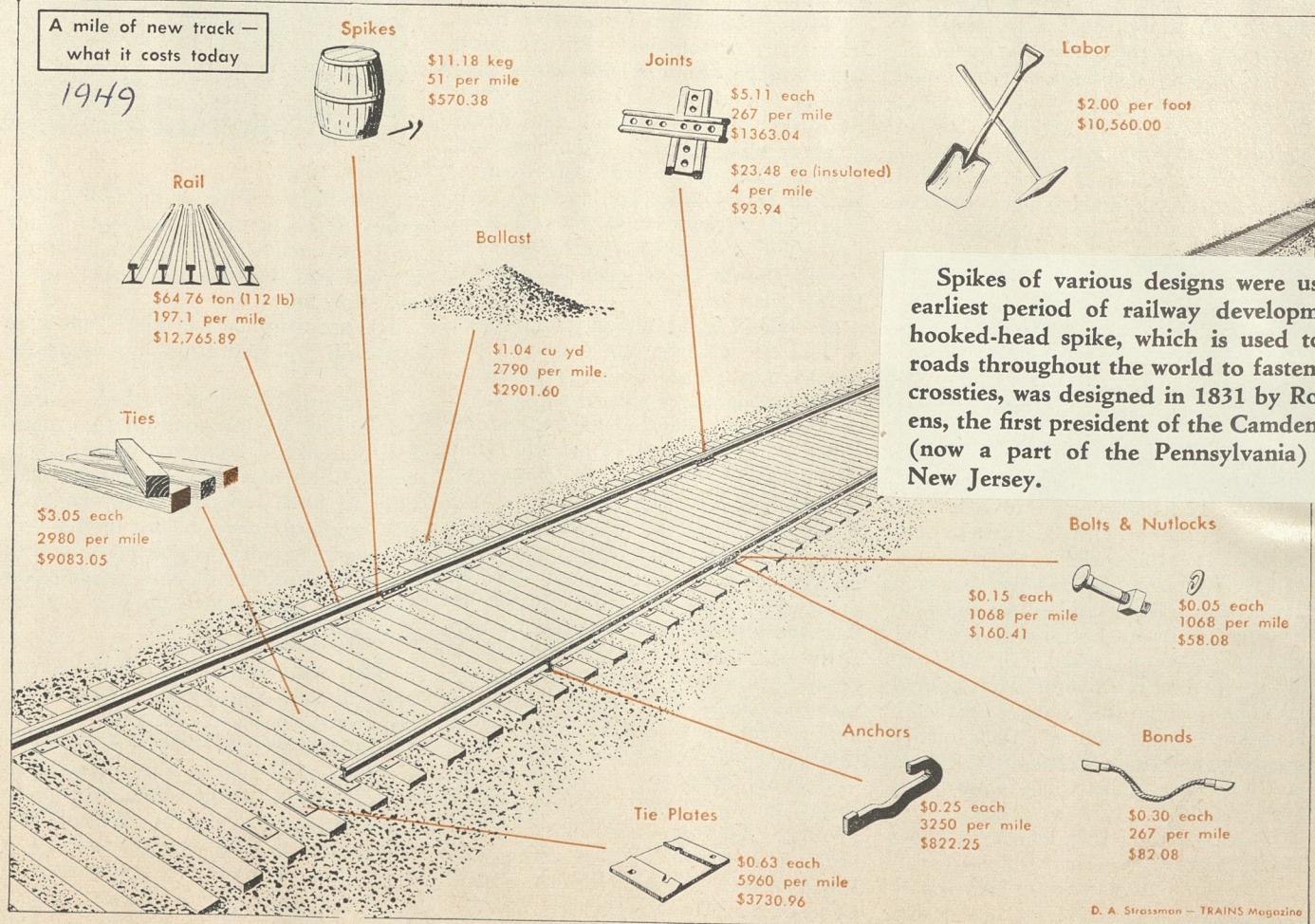
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429. In what ten-year period was American railway expansion the greatest?

Railway expansion reached its peak in the 1880's. From 1880 to 1889, inclusive, 74,720 miles of new railway lines were opened. The largest number of miles completed in any year was 12,876 in 1887.



Total costs in graph are figured on actual unit costs, which sometimes run to tenths of a mill. Unit costs given are rounded to nearest penny.

330. What is the Association of American Railroads?

The Association of American Railroads is the central coordinating agency of the American railway industry. In June, 1940, the Association's membership consisted of 214 railroad companies, as follows: 125 Class I railroads, 35 Class II railroads, 16 Class III railroads, 23 switching and terminal companies, 4 electric railroads and one leased line, all in the United States; 5 Canadian railroads and 5 Mexican railroads. The 204 railroads in the United States embraced 236,903 miles of railroad, or approximately 99 per cent of all railway mileage in the country. In addition, associate membership is held by 181 railway companies, embracing 75,826 miles of railroad in the United States and in foreign countries.

142. How many trains are operated daily on the American railroads?

An estimate based on operations in 1938 put the number of passenger trains at 18,000 and the number of freight trains at 15,200 daily. On this basis, a passenger train starts on its run somewhere in the United States every 4.8 seconds, and a freight train starts on its run somewhere in the United States every 5.7 seconds, day and night, on the average.

387. How has the railway mileage of this country grown since 1830?

From 23 miles of completed railroad in 1830, the railway mileage of the United States increased to 2,818 miles in 1840; 9,021 miles in 1850; 30,626 miles in 1860; 52,922 miles in 1870; 93,296 miles in 1880; 163,597 miles in 1890; 193,346 miles in 1900; 240,439 miles in 1910; and 252,845 miles in 1920. In 1930 there were 249,052 miles of railroad in the United States, and at the beginning of 1945 there were 227,335 miles. Mileage of all track increased from 115,647 miles in 1880 to 199,875 miles in 1890; to 258,784 miles in 1900; to 351,767 miles in 1910; to 406,579 miles in 1920, and to 429,883 miles in 1930, and declined to 398,437 miles at the beginning of 1945.

37. Are all railroads in the United States now standard gauge?

Of 236,842 miles of railroad in this country at the beginning of 1939, 235,386 miles, or 99.4 per cent, were standard gauge lines and 1,456 miles were narrow gauge lines, mostly three feet. Some 113 miles of railroad tracks were equipped with three rails to accommodate both narrow and standard gauge equipment. The narrowest gauge is two feet, on the 8-mile Monson Railroad and the 16-mile Bridgton & Harrison Railway, both in Maine.

Spikes of various designs were used from the earliest period of railway development, but the hooked-head spike, which is used today by railroads throughout the world to fasten steel rails to crossties, was designed in 1831 by Robert L. Stevens, the first president of the Camden and Amboy (now a part of the Pennsylvania) Railroad in New Jersey.

Section through steam chest

How the Walschaert valve gear works

Four operations take place on each side of each steam locomotive piston every time the drivers make a complete revolution:

1. Steam is admitted to the cylinder just before the driver reaches "dead center." As the driver passes dead center the steam begins to push the locomotive by exerting its pressure on the piston.

2. After the wheel has turned part way, the valve cuts off the steam supply. The steam, however, continues to exert a pushing force because it can expand a great amount before its pressure is reduced to the pressure of the exhaust steam on the other side of the piston. The sooner the live steam is cut off, the more efficiently the engine will run, because

more of the expansive power will actually be used in the cylinder.

3. At the end of the stroke, the valve opens and lets the exhaust steam blow out of the stack. As the piston returns, the cylinder is cleared of most of the remaining steam.

4. The ports are again closed and for a brief moment the remaining steam is

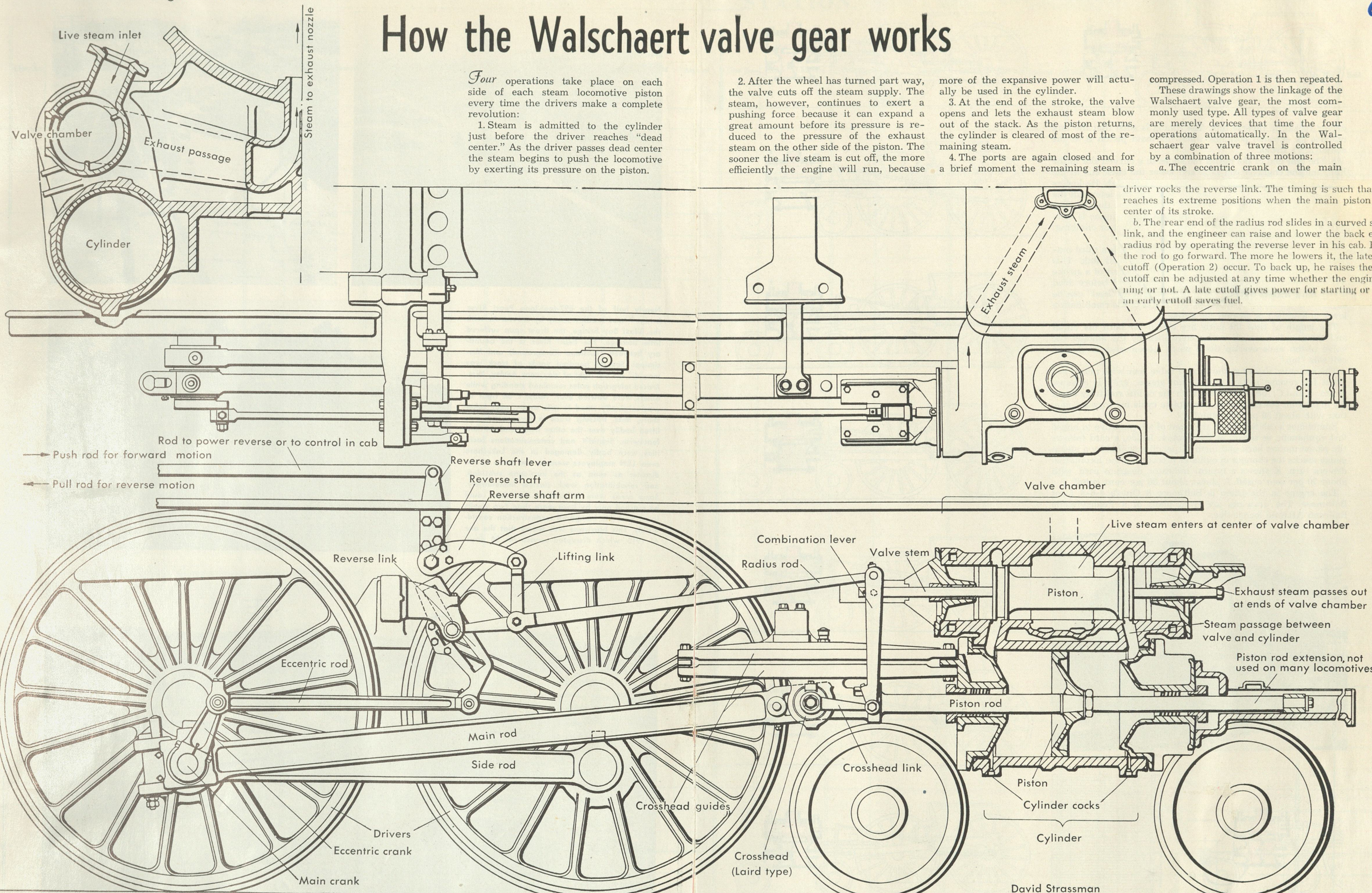
compressed. Operation 1 is then repeated.

These drawings show the linkage of the Walschaert valve gear, the most commonly used type. All types of valve gear are merely devices that time the four operations automatically. In the Walschaert gear valve travel is controlled by a combination of three motions:

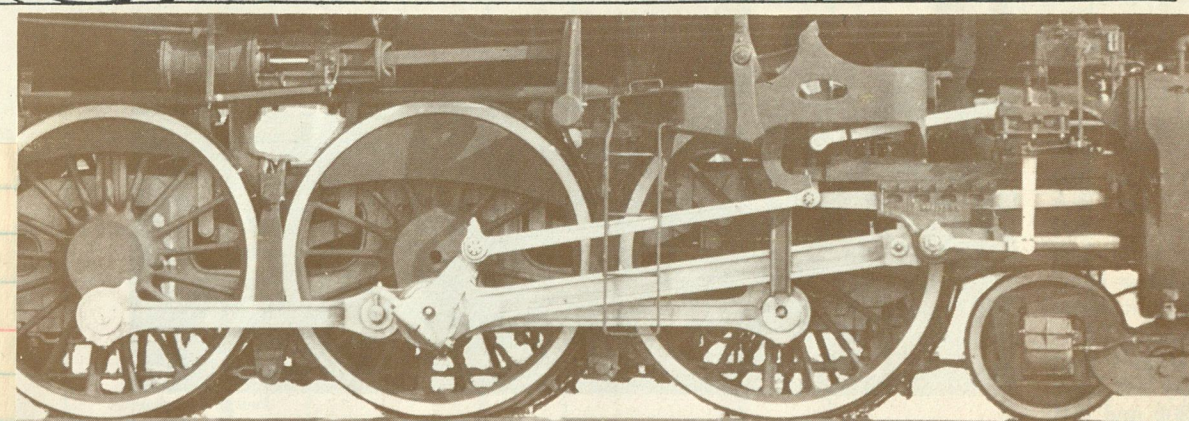
a. The eccentric crank on the main

driver rocks the reverse link. The timing is such that the link reaches its extreme positions when the main piston is at the center of its stroke.

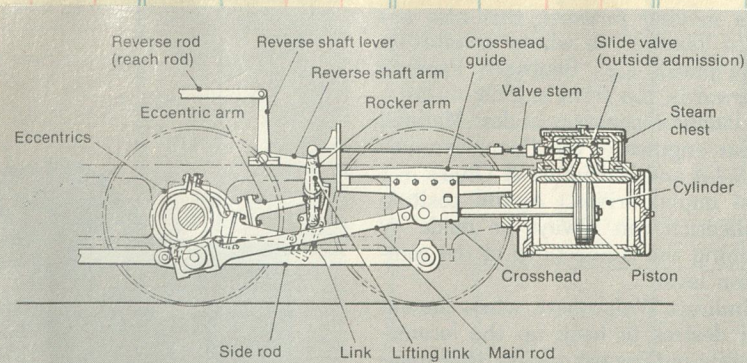
b. The rear end of the radius rod slides in a curved slot in the link, and the engineer can raise and lower the back end of the radius rod by operating the reverse lever in his cab. He lowers the rod to go forward. The more he lowers it, the later will the cutoff (Operation 2) occur. To back up, he raises the rod. The cutoff can be adjusted at any time whether the engine is running or not. A late cutoff gives power for starting or climbing; an early cutoff saves fuel.



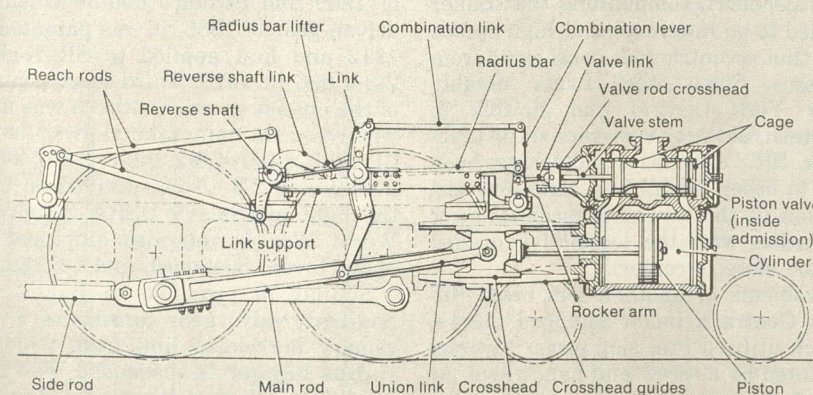
26 Walschaert valve gear



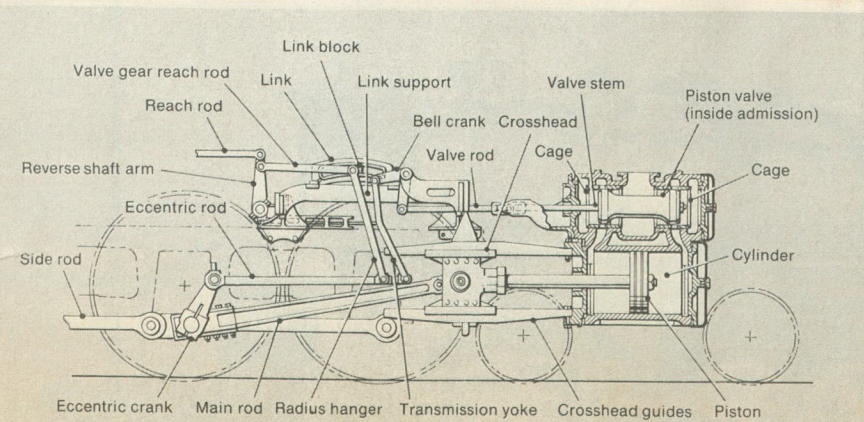
Baker gear



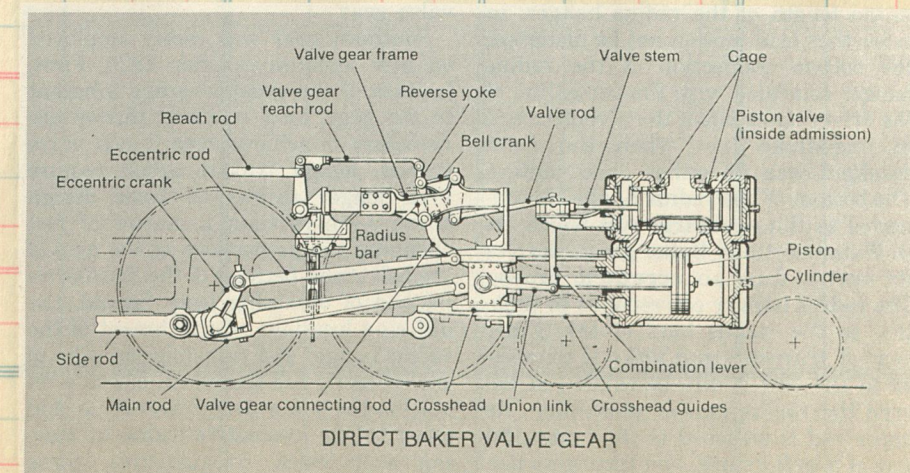
STEPHENSON VALVE GEAR



YOUNG VALVE GEAR



SOUTHERN VALVE GEAR



DIRECT BAKER VALVE GEAR

112. How much contact is there between the wheel of a locomotive or car and the rail?

Theoretically, the contact of an absolutely perfect wheel with an absolutely flat surface, if the materials of which the wheel and surface are made are incompressible, would be a thin line not much wider than the edge of a knife. However, all structural materials deform under load. Loaded wheels resting on a rail tend to flatten at the point of contact, and the tread of the rail tends to adjust itself to the curve of the wheel. Hence, the actual contact of wheel and rail is approximately the width of a chalk line.

SELLER

WASHINGTON UNION STATION

Served by the B. & O., P.R.R., R.F. & P., C. & O., and Southern. Operated as Washington Terminal Co. One of the most impressive stations in the U. S., designed by D. H. Burnham and completed in 1907. The concourse, perhaps the largest room in the world, is 760' long by 130' wide; the waiting room measures 130' wide and 220' long. The building is constructed of white marble and granite and has been called "the perfect example of the city gate designed in perfect harmony with the architecture of the community for which it serves as an entrance," classical but not a facsimile of any classic building. Contains 33 tracks of which 13 are thru for southbound trains and 20 tracks that stub at concourse level. Today, as might be expected, this building has deteriorated and is in need of extensive repairs.



THE WASHINGTON TERMINAL COMPANY.

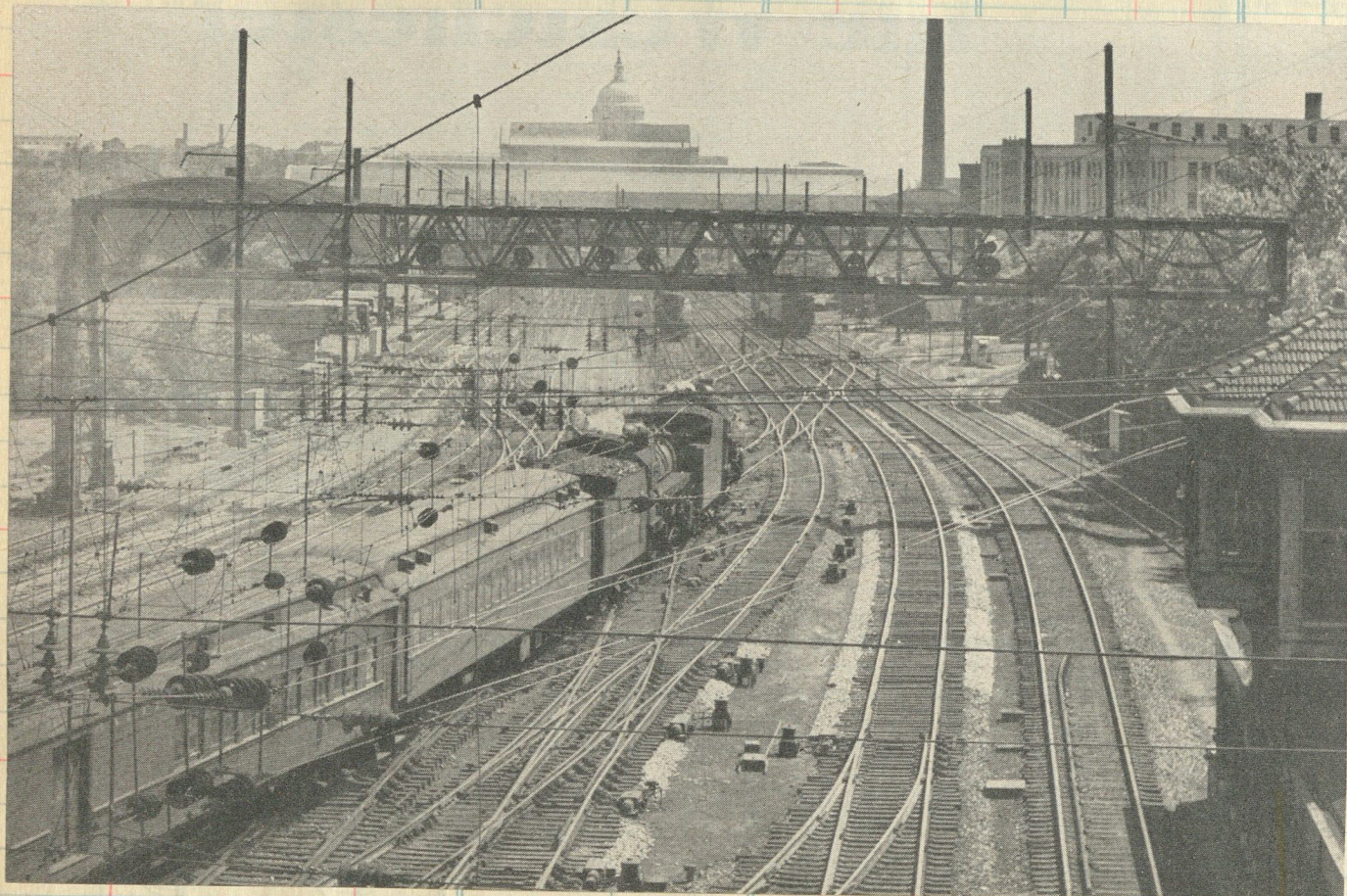
(Gauge 4-5 1/2 Miles, W.)

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General Offices—Union Station, Washington, D.C.

The Washington Terminal Company provides terminal facilities for passenger trains to and from Washington, D.C., of
The Baltimore & Ohio Railroad Company.
The Chesapeake & Ohio Railway Company.
Philadelphia, Baltimore & Washington Railroad Company.
Southern Railway Company and Washington Southern Railway Company.

January, 1916.

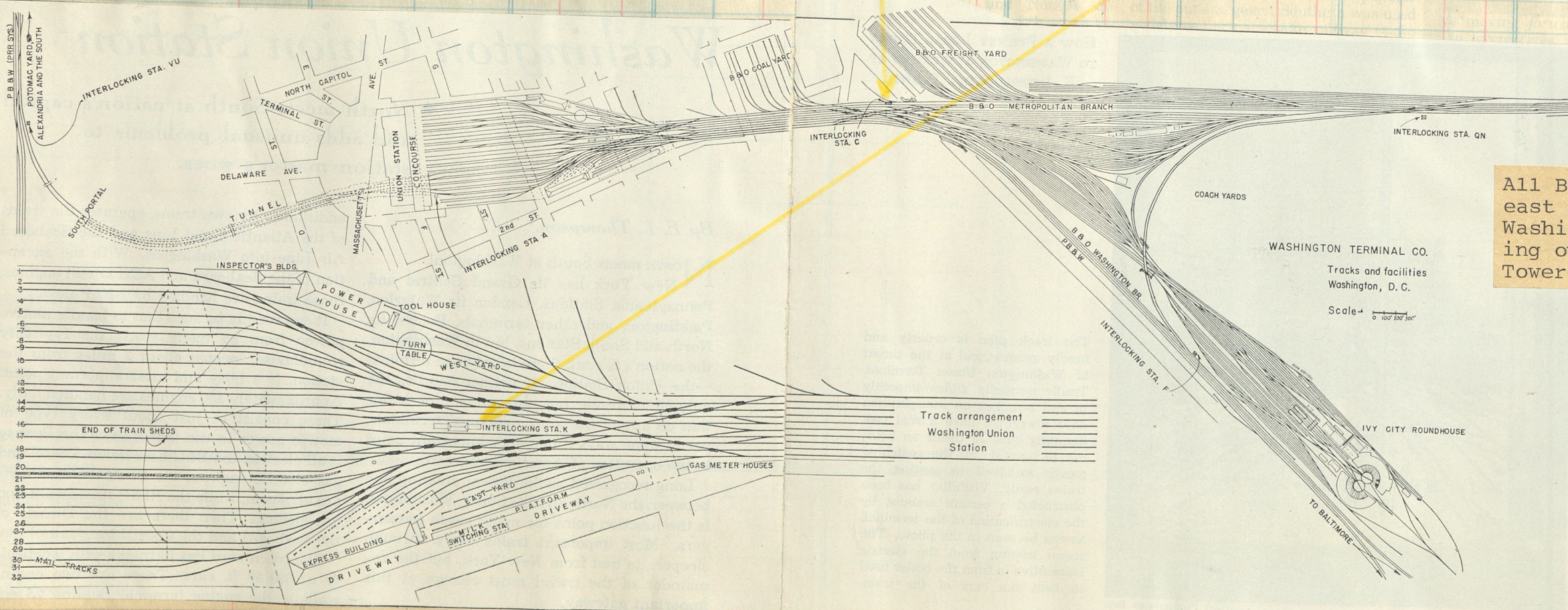


The throat tracks approaching Washington terminal. Tower "C" at the right and the B. & O. train will terminate here as it is heading into the station.



Not pinball machines, but the "innards" of K Tower.

K Tower, with 172 working levers, is center of operations at the Washington Union Station. This view shows a portion of the giant track diagram which tells the operators what tracks are occupied, what tracks are clear. The three men in the foreground are levermen; the four in the background are train directors, all on active duty when the photo was taken. The "pinball machines" chalk up a score of 250 regular trains each day, plus numerous extra sections.



All B. & O. thru trains, both east & west bound, backed into Washington Terminal after passing over the loop track between Towers "QN" and "F".



Scale: 2 1/2 miles to 1 inch

— Railroads
 — Electric lines
 - - - Abandoned lines
 — Main roads

ACL Atlantic Coast Line
 A&F Arlington & Fairfax (Elec)
 B&O Baltimore & Ohio
 CTC Capital Transit Company
 CB Chesapeake Beach
 C&O Chesapeake & Ohio
 EW East Washington Railway Company
 MV Mt Vernon Alexandria & Washington (Elec)
 PA Pennsylvania
 RFT Richmond Fredericksburg & Potomac
 RC Rosslyn Connecting Railroad
 SAL Seaboard Air Line
 SOU Southern
 USNG U.S. Naval Gun Factory Railroad
 W&OD Washington & Old Dominion
 WB&A Washington Baltimore & Annapolis (Elec)
 WT Washington Terminal

George A. Gloff



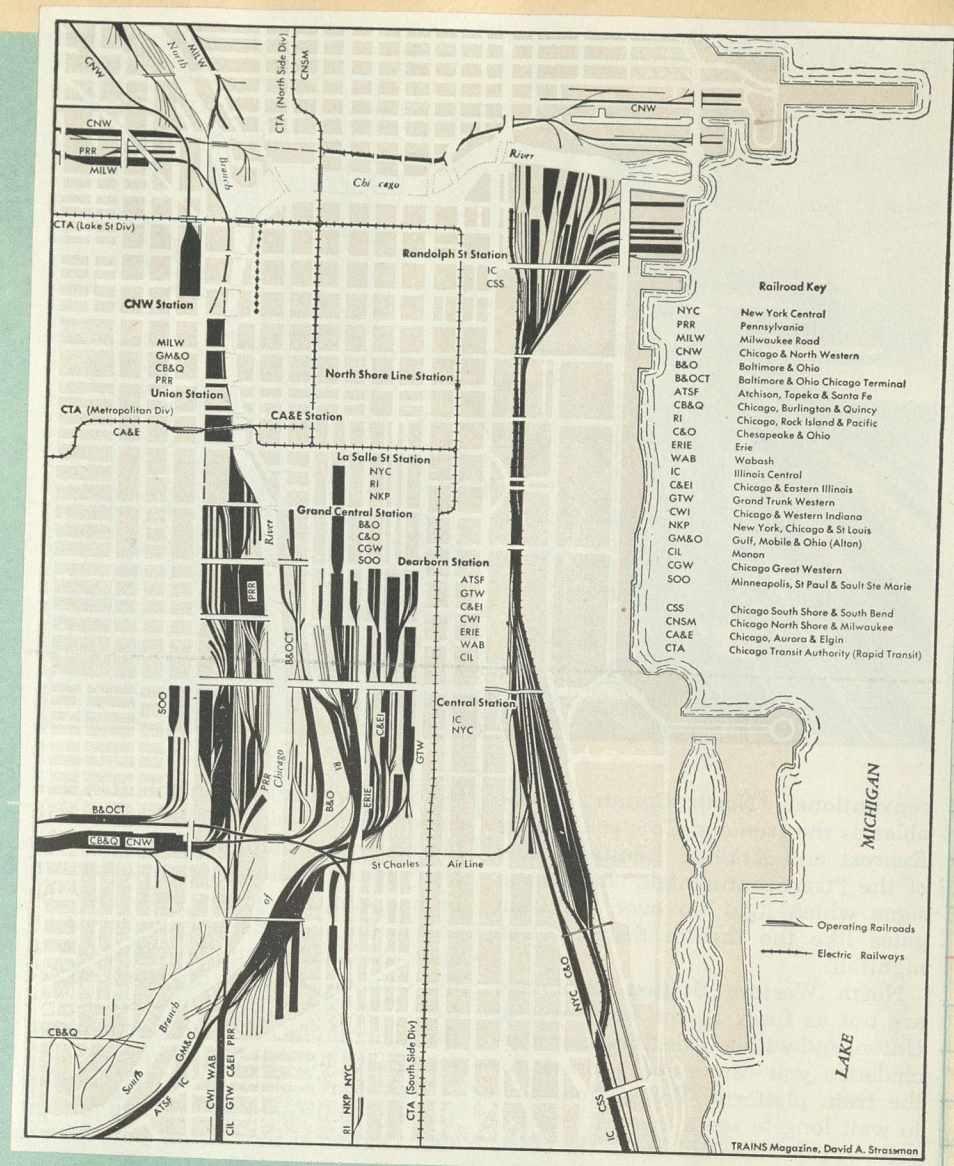
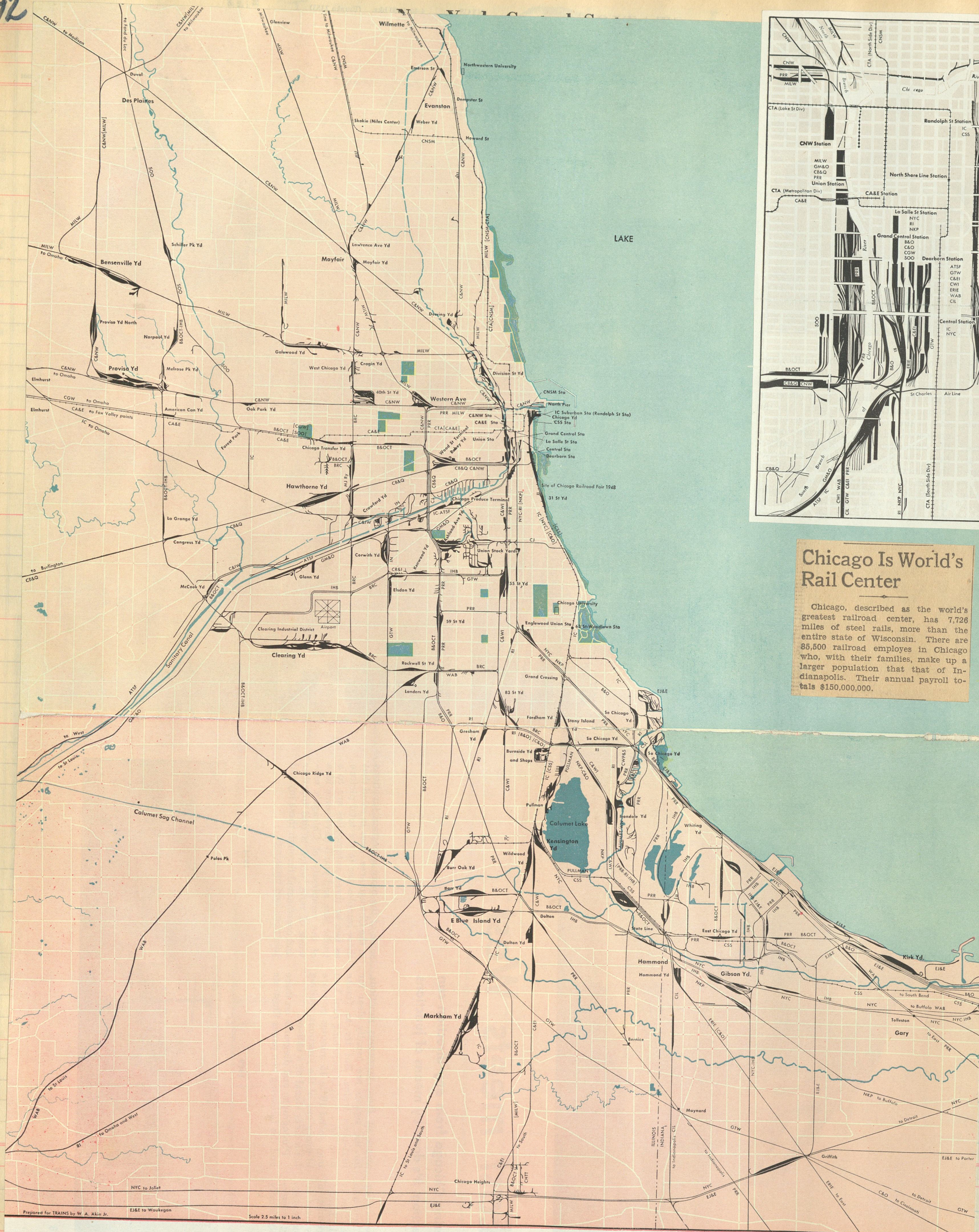
Something unheard of in railroading occurred December 23, when the Washington Union Station closed its doors! The photo shows the 760-foot concourse which was designed to accommodate 25,000 people at one time. Conservative estimates place the number in the station that Saturday afternoon at 100,000. All ticket sale records were broken with \$235,000. Congestion began getting serious about noon, and when trains left with passengers hanging on the steps, additional police were called. The doors just couldn't be closed, for no one would get off and hundreds more were still trying to get aboard. By 4:30 the situation had become very serious as passengers packed the concourse and some had even succeeded in scaling the high iron fence. Late in the evening several railroads stopped ticket sales entirely for a several-hour period. Regardless of whether a passenger held Pullman or coach reservations, it was almost an impossibility to get to the train, resulting in a great deal of Pullman space going out empty. Crews had to be taken out to the trains by way of the post office and the mail ramps. Something drastic had to be done, so the station was finally closed until some order could be restored.

Ranny Routt, *Washington Evening Star*.

1944



B. & O. and P.R.R. trains departing Washington for New York
Engine at extreme left is a yard engine of the Washington
Terminal Co.



Clos. No.	Sold	Amount	Clos. No.	Sold	Amount
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Chicago Is World's Rail Center

Chicago, described as the world's greatest railroad center, has 7,726 miles of steel rails, more than the entire state of Wisconsin. There are 85,500 railroad employees in Chicago who, with their families, make up a larger population than that of Indianapolis. Their annual payroll totals \$150,000,000.

How many passenger terminals are there in Chicago and what roads use them?—W. F., Linfield, Pa.

There are eight: (1) the Dearborn, at Dearborn & Polk, used by the Santa Fe, C&E, Chicago & Western Indiana, Monon, Erie, Grand Trunk, Wabash; (2) the Grand Central, at Harrison and Wells, used by the B&O and B&OCT, Great Western, Pere Marquette, Soo Line; (3) Union, at Canal and Adams, used by the Alton, Burlington, PRR, Milwaukee; (4) the Central, at 12th and Lake Front, used by CSS&SB, Big Four, IC, and Michigan Central; (5) La Salle St., at La Salle and Van Buren, used by the NYC; Rock Island and Nickel Plate; (6) C&NW, at Madison and Canal, used by C&NW; (7) Wells St., used by Chicago, Aurora & Elgin; and (8) the various stations of the Chicago, North Shore & Milwaukee.

TRANSFER SERVICE between trains IN CHICAGO

Your Parmelee Transfer Coupon—included as part of your through ticket—entitles you to transportation in new, luxurious Limousines from your incoming station to your outgoing station . . . or to any hotel or other destination in downtown Chicago. This service also available, at nominal charge, to passengers not holding a Parmelee Transfer Coupon.

Ask any Ticket Agent about **PARMELEE SERVICE**

(1) The following table, in which "size" is based on the number of railways entering a city, will supply you with the information you want:

City	Number of roads
Chicago	33
St. Louis	28
E. St. Louis, Ill.	24
Toledo, O.	19
Kansas City, Mo.	18
Buffalo, N. Y.	15
Minneapolis, Minn.	14
Madison, Ill.	14
New York City	14
Peoria, Ill.	14
Hammond, Ind.	12

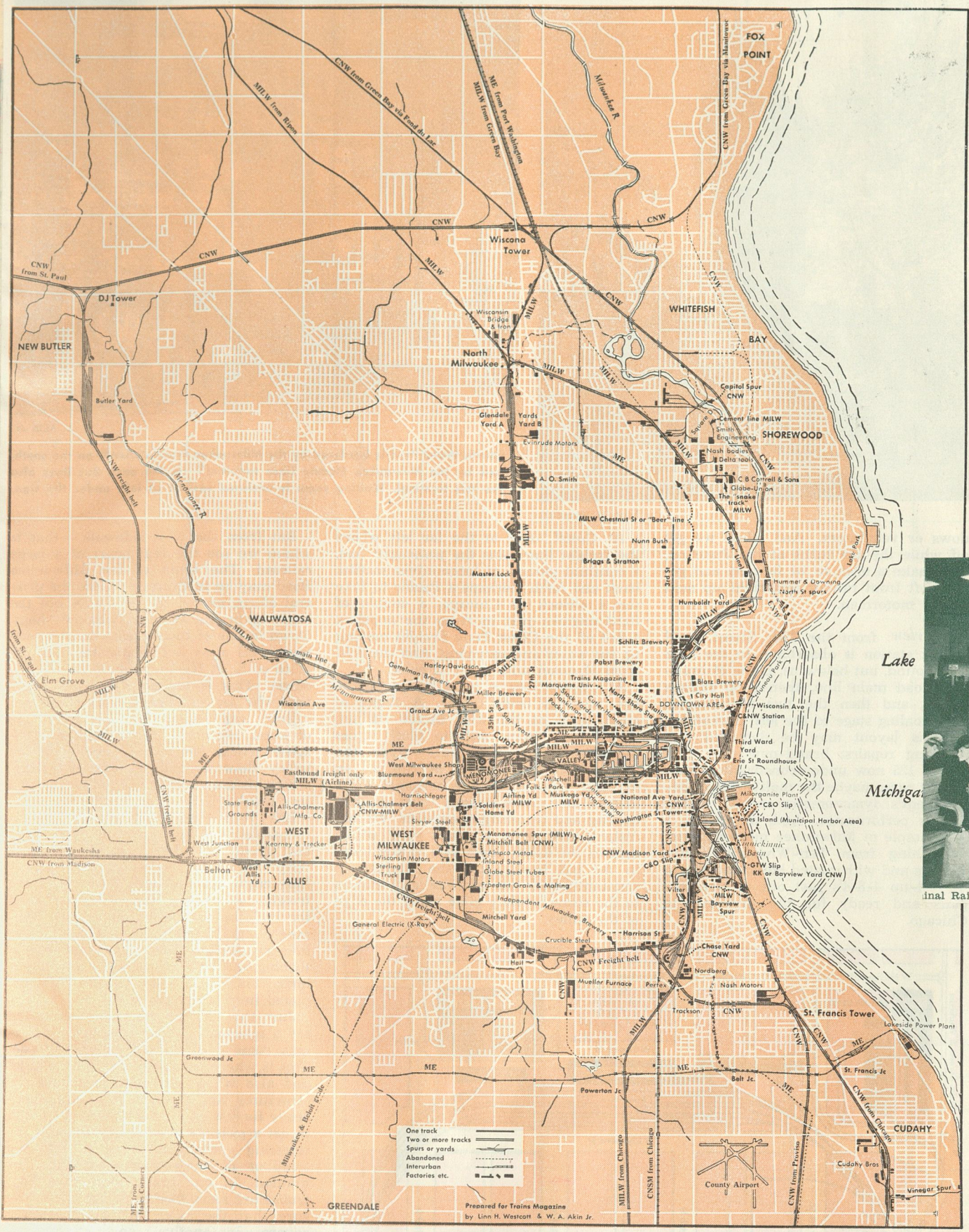
Seven cities boast 11 railways each: Birmingham, Ala.; Cincinnati, O.; Cleveland; Des Moines, Ia.; New Orleans; Detroit; and Englewood, Ill.

A uniformed agent of the **PARMELEE COMPANY** boards all incoming Burlington through trains before arrival at the Chicago Union Station, with whom patrons may arrange for the transfer to other Depots or Loop Hotels, or for the transfer of baggage to or from the station to any city address.

Chicago terminal district

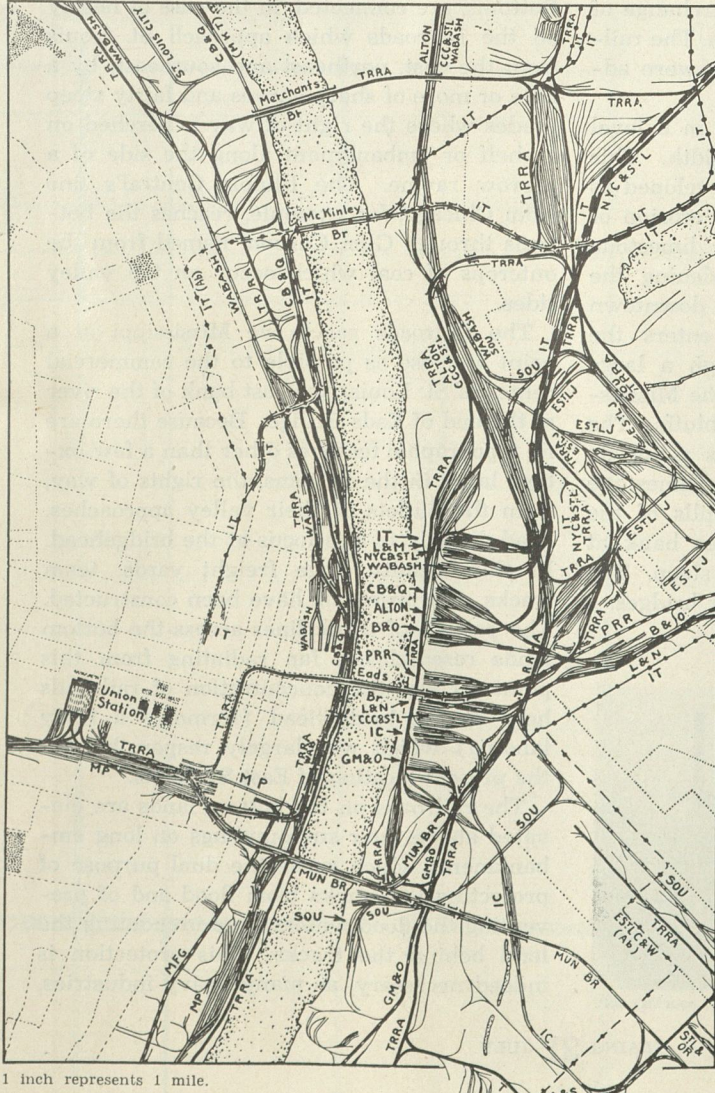
Chicago grew on the beaches of glacial times, and except for Blue Island and the Palos Park region the land is very flat, ideal for railroads. The hazards that have molded the railroad pattern are the present shore of Lake Michigan, the valley of the Sanitary Canal and the checkerboard division of property made years ago when the government first offered the western lands to the public. Most streets run parallel to the old boundaries. Only the principal streets are indicated on this map, but all main and connecting railroads are shown. You can almost read the history of the railroads from a map. Compare the Illinois Central, one of the oldest roads, with the younger Chicago & Eastern Illinois, for example. The IC runs in a favored position along the shore as far south as 50th Street, and then takes off in a

beeline for points in southern Illinois. By the time C&E was built, much more of the land areas were built upon and a beeline route was too costly, so the railroad paralleled the streets and property boundaries. Land costs had become high too, so C&E, Erie, Monon, and others from the south and west pooled their strength and used the jointly owned Chicago & Western Indiana to snake their way into the downtown Loop. This kind of history repeats itself on every side of the city. The yards have gradually decentralized as the city has grown. On the C&NW, for example, the principal yards moved gradually westward to Proviso. And on the Burlington, the yards have gone all the way to the far ends of the Aurora Division at Galesburg and Savanna, Ill. Galesburg is 162 miles from Chicago; Savanna is 145 miles away.



Railroads of Milwaukee

Most of Milwaukee is laid out on a high plain some 100 feet higher than Lake Michigan. From the low level downtown area and the Menomonee Valley the railroads climb to the plain via tributary valleys. The industries and spurs shown give an idea of how much a city this size depends on railroads for its life. Data is from 1941 aerial photos.



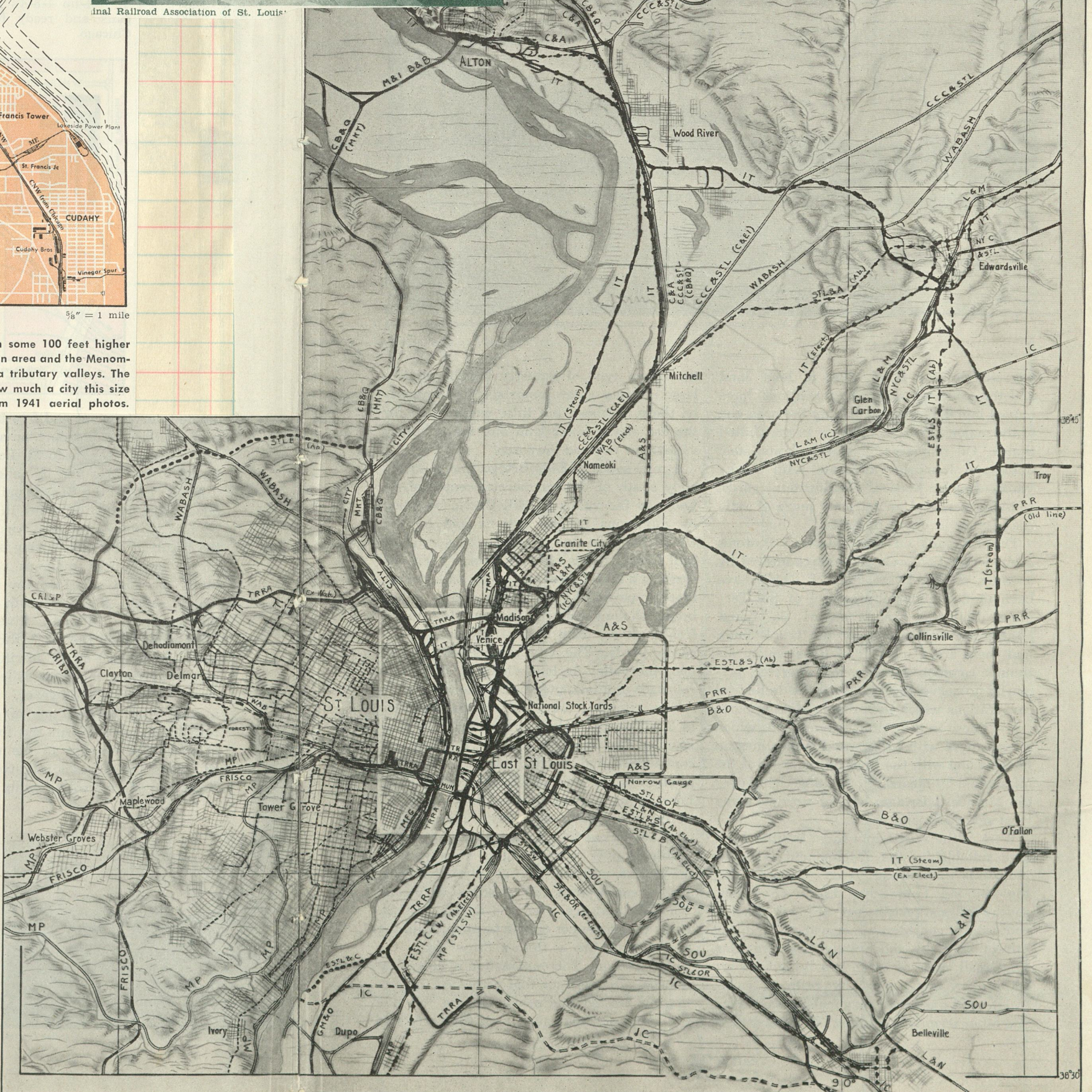
Served by: C. & A., StL-S.F., N.Y.C., I.C., B. & O., P.R.R., MoP., Wabash, G.M. & O., C. & E.I., C.B. & Q., C.R.I. & P., Southern, N.Y.C. & StL., L. & N., M-K-T, StL-S.W.
Operated by the Terminal Railroad Association of St Louis

The St. Louis Union Station which was completed shortly after the beginning of the 20th Century.



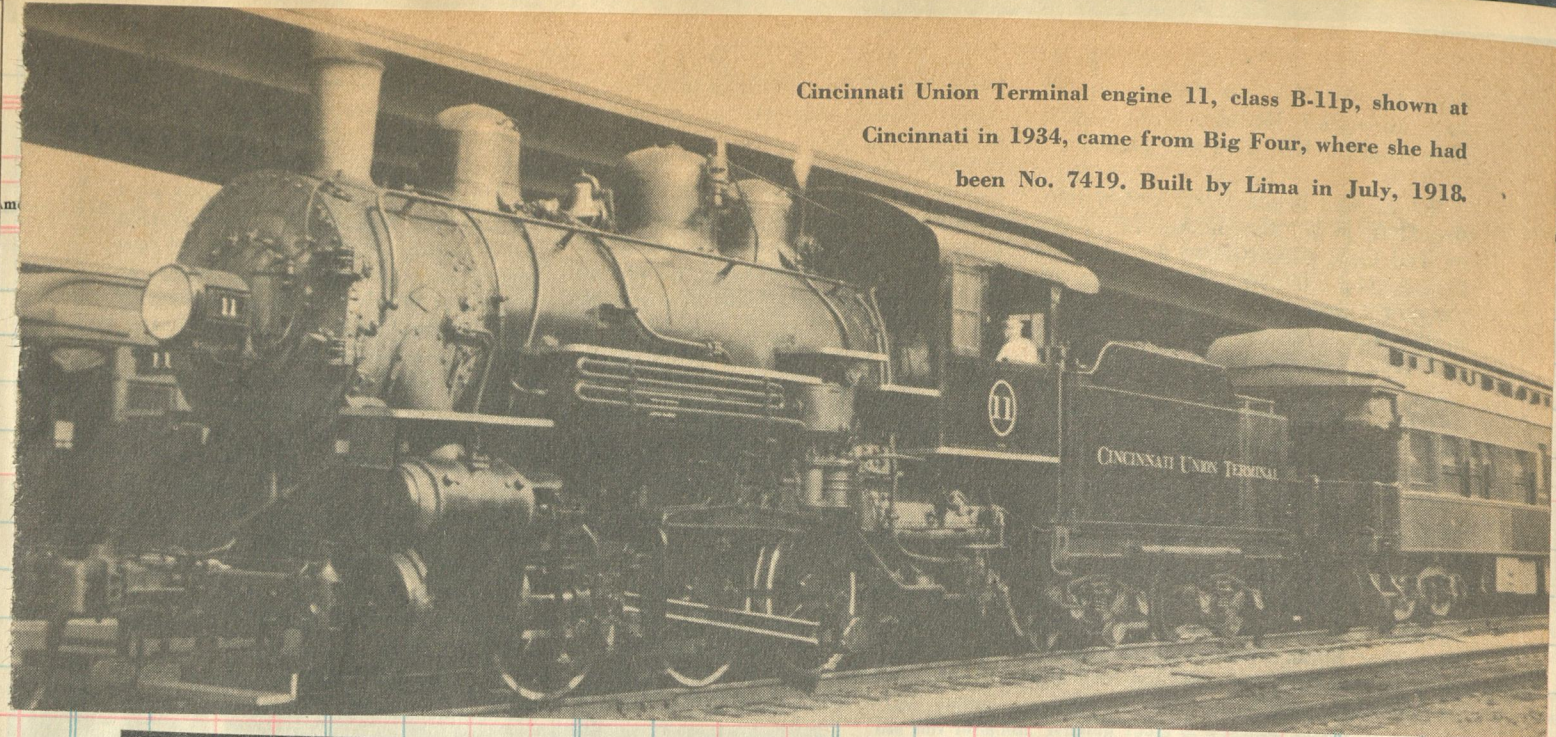
Terminal Railroad Association of St. Louis

St. Louis and Vicinity

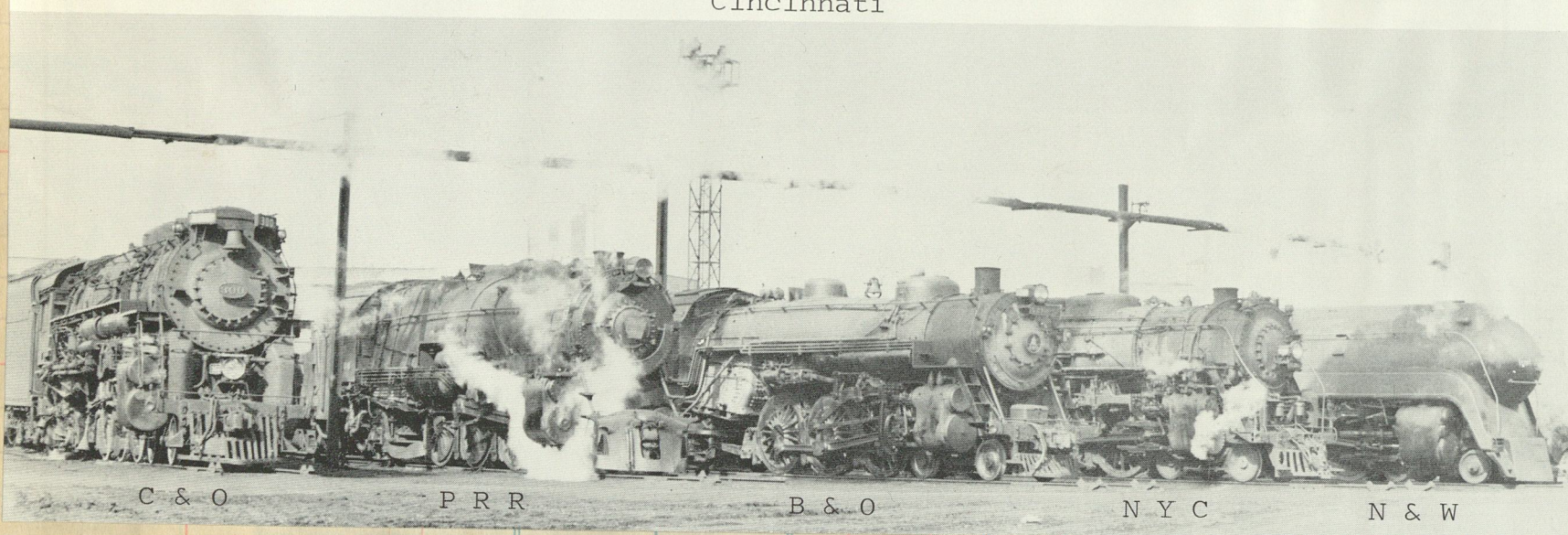


CINCINNATI UNION TERMINAL

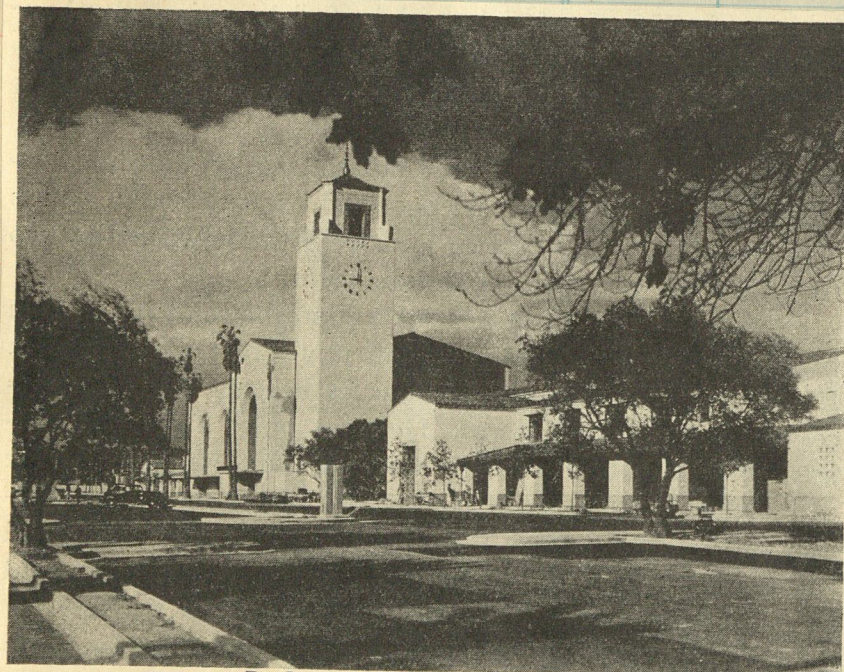
Served by: B. & O., N.Y.C., Southern, N. & W., P.R.R., L. & N., C. & O.
Opened 1933



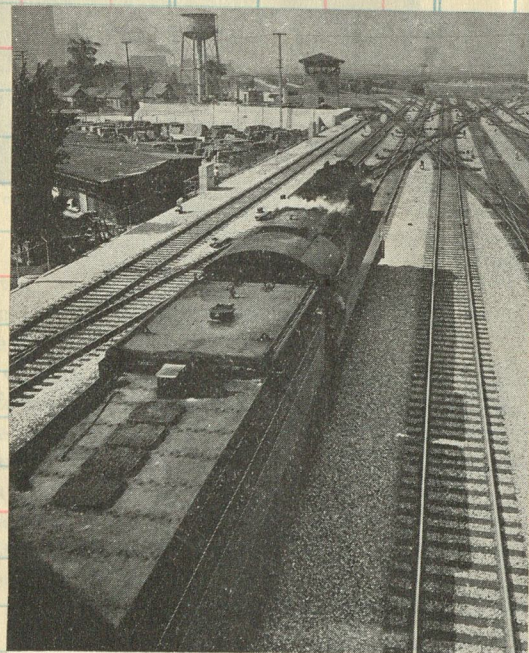
Cincinnati



Cincinnati



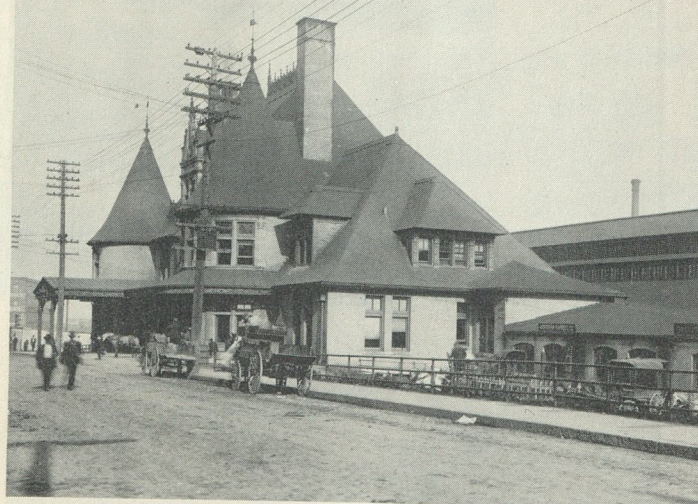
L.A. & S.L., S.P., A.T. & S.F.
The Los Angeles Union Station is in Spanish Style



All photos courtesy Southern Pacific

A Southern Pacific train on the throat tracks immediately to the north of Los Angeles Union Station

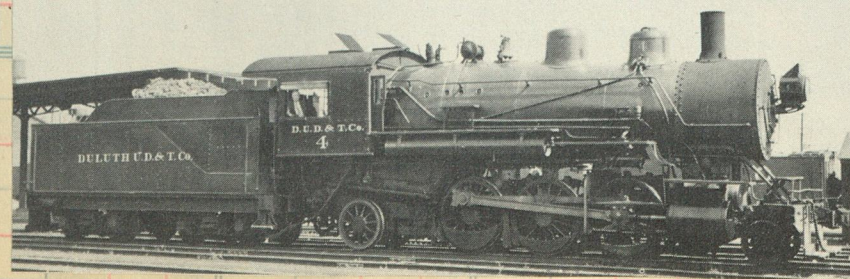
G.N., N.P., D. & I.R., D.M. & N. and D.S.S. & A.



DM&IR Railway Historical Collection.

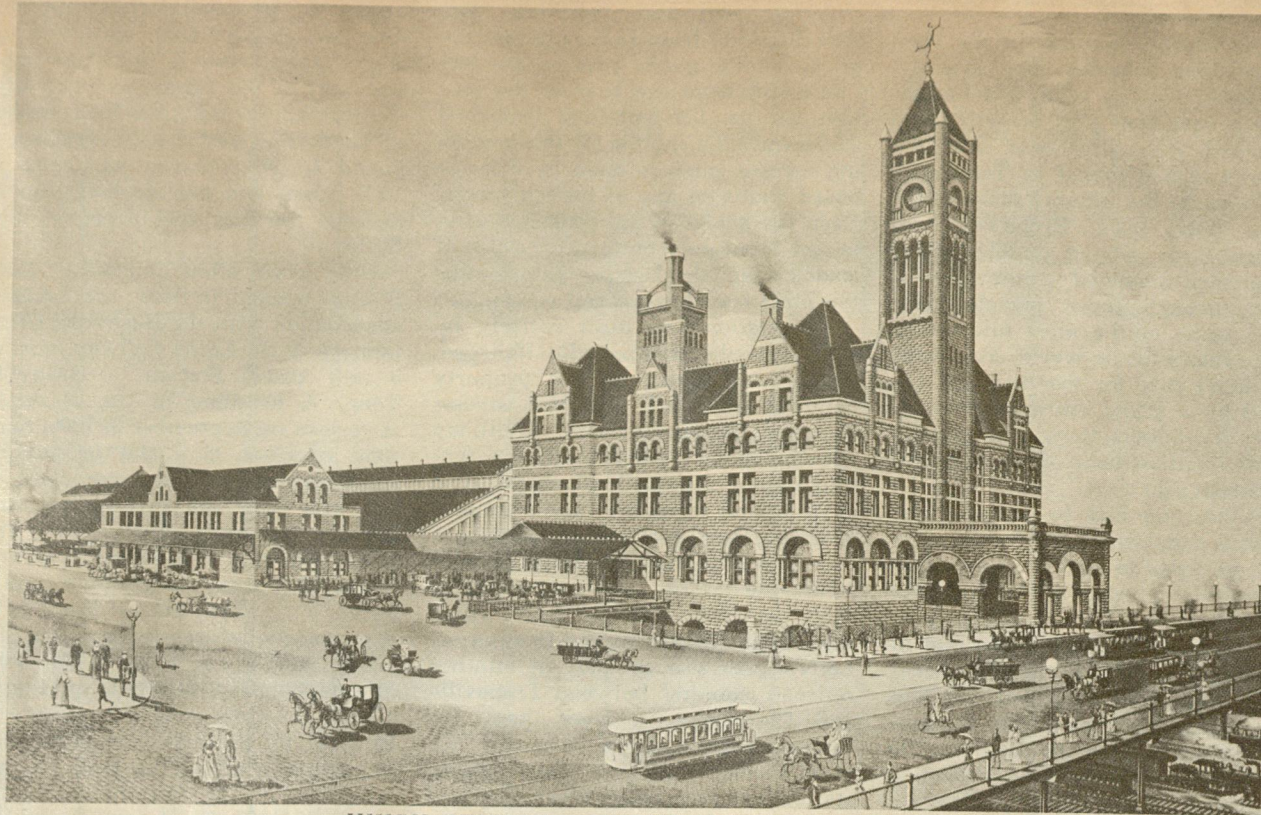
DULUTH UNION DEPOT was nearing its zenith years of serving 50 trains daily when this photo was taken in 1910. The scene looks generally eastward from the front, or Michigan Street, side.

ex NP #2387 Brooks 1907 c/n 41931

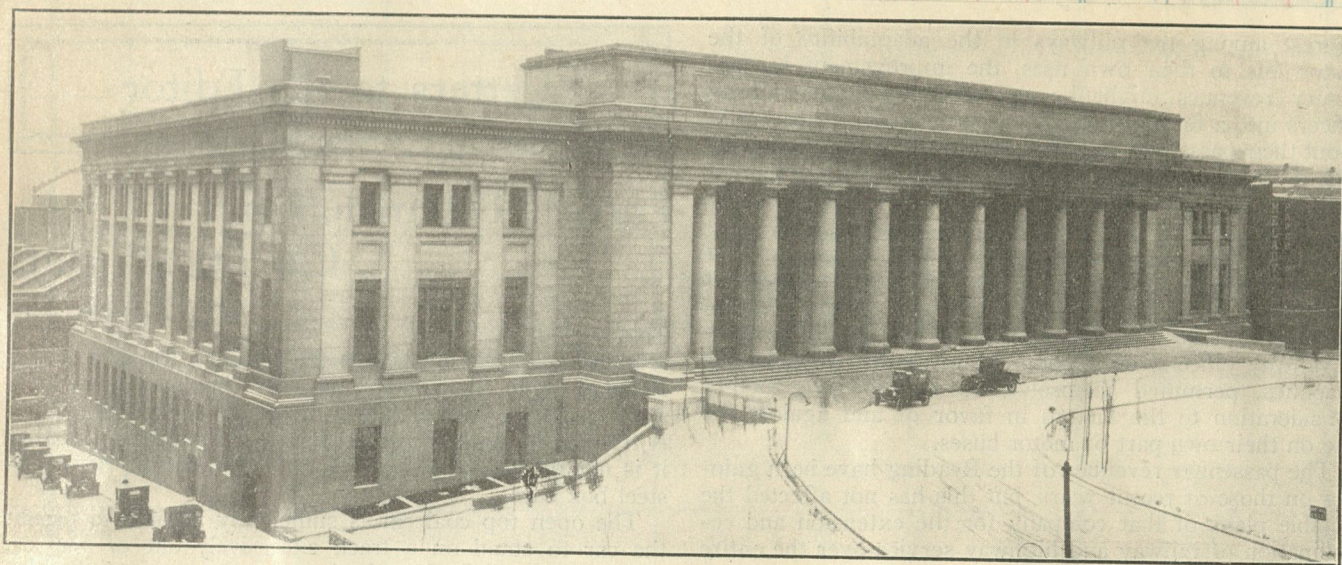


The Memphis Union Station, which was erected in 1913.

Served by: Southern, StL-S.W., N.C. & StL., C.R.I. & P., L. & N., StL-S.F., Mo P., I.C., G.M. & O.

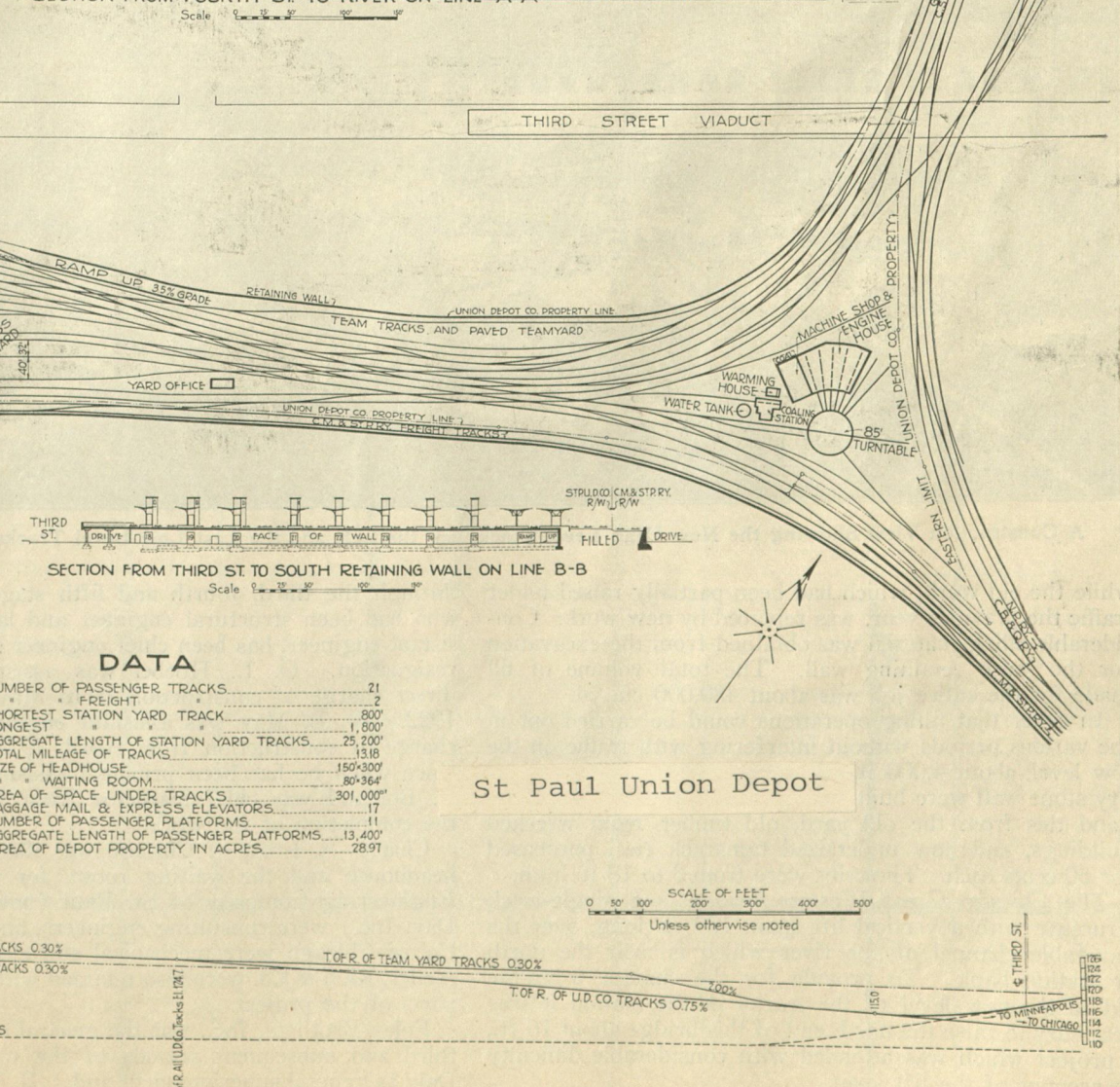
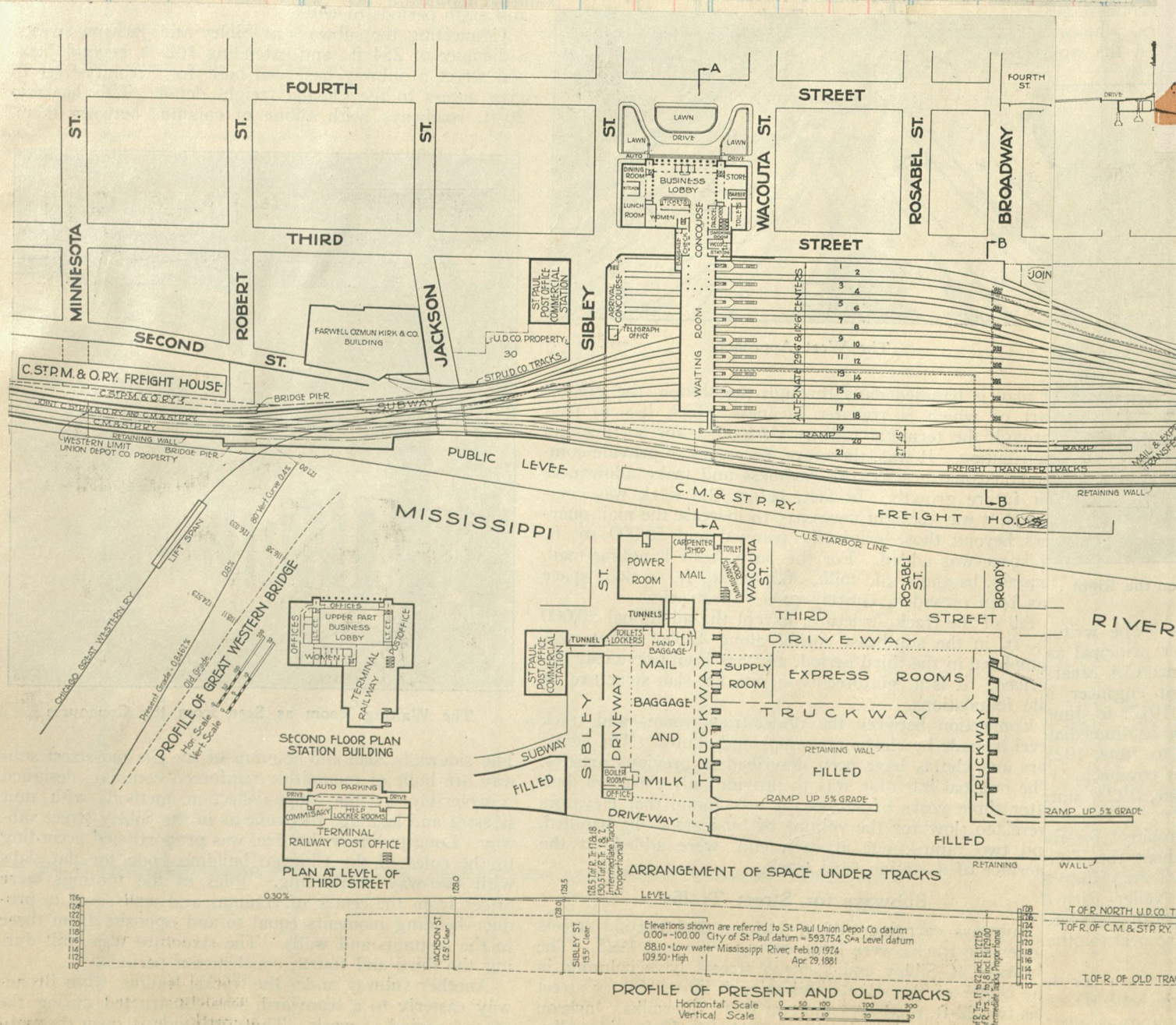
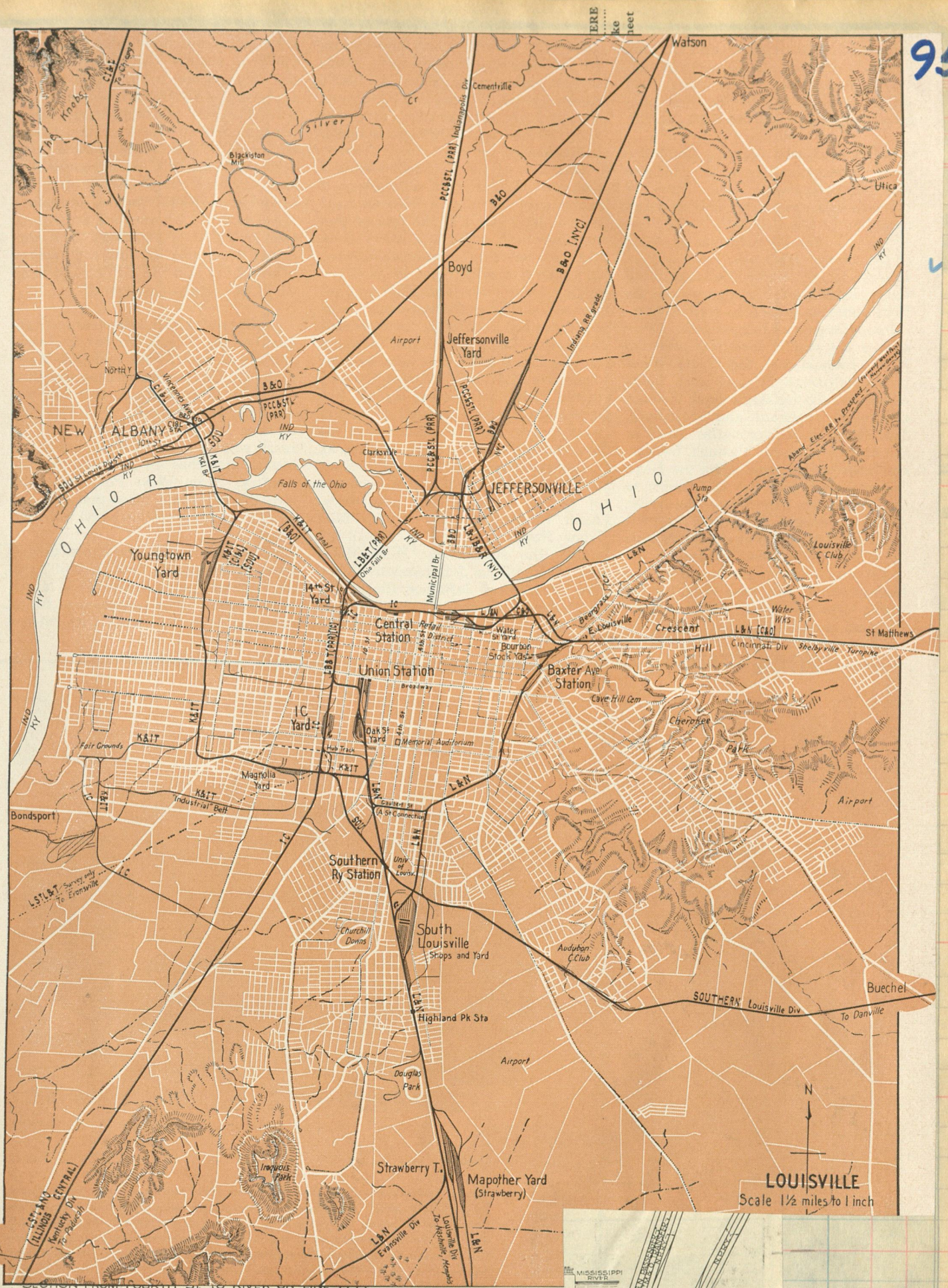


UNION STATION, NASHVILLE, TENNESSEE.
TERMINALS OF THE NASHVILLE CHATTANOOGA & ST. LOUIS RAILWAY
L. & N., N.C. & STL.



The North or Entrance Elevation of the Station Head House Served by: C.B. & O., C.R.I. & P., C.G.W., C.M. StP & P., C.StP.M. & O., G.N., N.P., M. & StL., Soo Line.

St. Paul Union Depot Completed



DATA	
NUMBER OF PASSENGER TRACKS	21
NUMBER OF FREIGHT TRACKS	2
SHORTEST STATION YARD TRACK	200
LONGEST STATION YARD TRACK	1,600
AGGREGATE LENGTH OF STATION YARD TRACKS	25,200
TOTAL MILEAGE OF TRACKS	13.8
SIZE OF HEADHOUSE	150-300
WAITING ROOM	80-364
AREA OF SPACE UNDER TRACKS	301,000
BAGGAGE MAIL & EXPRESS ELEVATORS	17
NUMBER OF PASSENGER PLATFORMS	13,400
AGGREGATE LENGTH OF PASSENGER PLATFORMS	13,400
AREA OF DEPOT PROPERTY IN ACRES	28.91

St Paul Union Depot

SCALE OF FEET
0 100 200 300 400 500
Unless otherwise noted

Track Layout and Floor Plans of the Station

East Approach to the Station and Typical Sections

Exterior and Interior Views of Kansas City's New Union Station

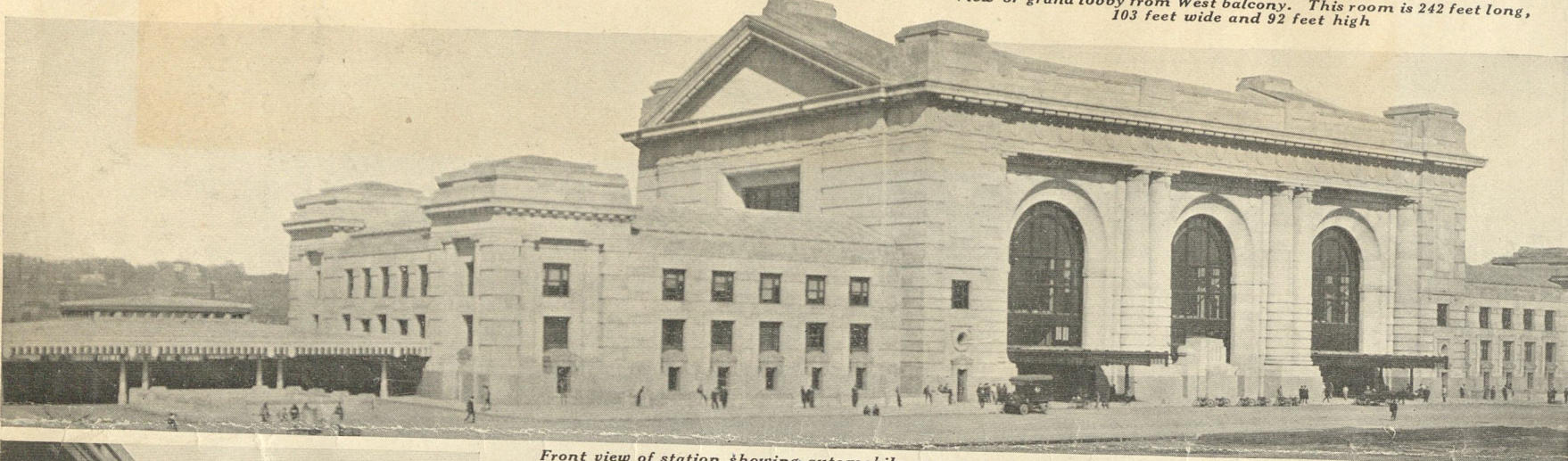
In many respects the finest in America
Served: C.G.W., StL-S.F., K.C.S., C. & A., M-K-T, A.T. & S.F., U.P., Wabash, C.M.StP & P.,
MoP., C.B. & Q.



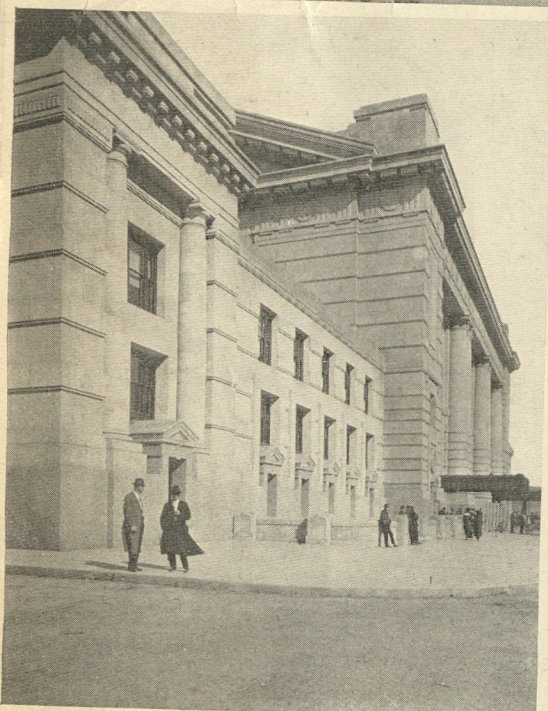
View of ticket office and grand lobby from waiting room



View of grand lobby from West balcony. This room is 242 feet long, 103 feet wide and 92 feet high



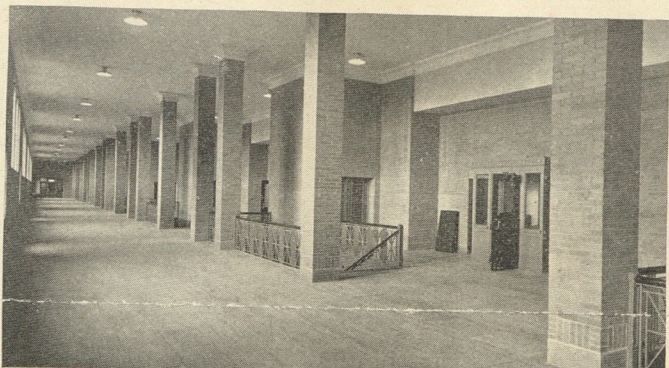
Front view of station showing automobile concourse on extreme left and office wings on either side of main building



View showing massive proportions of this hand-some building



Approach to baggage and express departments and subways

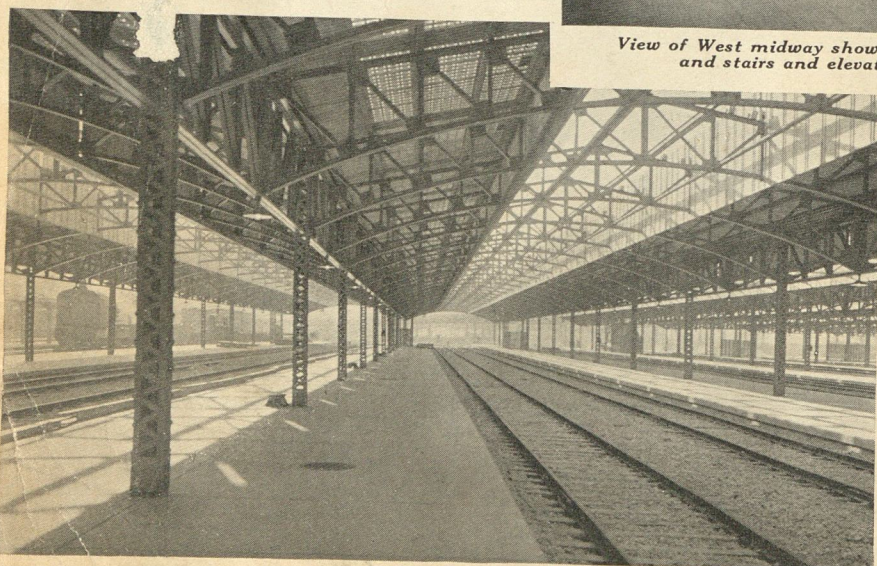


View of West midway showing door from waiting room and stairs and elevators to and from trains



Looking from the balcony over ticket office in grand lobby into the waiting room

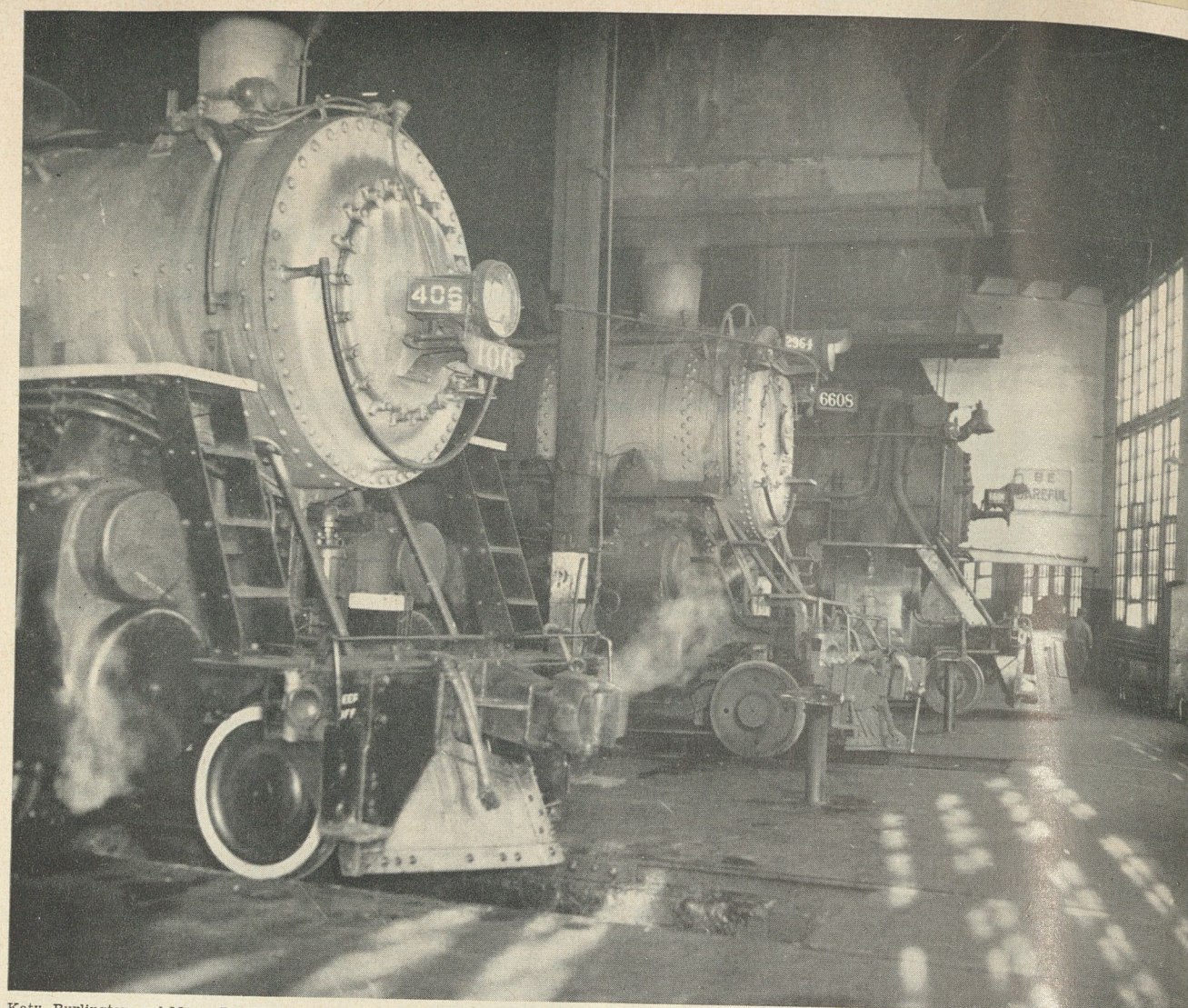
Main waiting room, 352 feet long, 78 feet wide, 73 feet high



A view in the train shed



Opened Nov 1st 1914



Katy, Burlington and Mopac Pacifics stand in Kansas City Terminal's roundhouse.

Don S.

Something about steam

THERE are those drab and uninformed souls who maintain that steam locomotives are simply financial investments, motive power units wrought from steel to haul passengers and tonnage. These observers would have you believe that there is nothing beyond elementary science in the fact of raising steam in a boiler, then directing that force against shuttling pistons and on to rolling drivers. Anyway, they say, steam locomotives have been rendered obsolete by diesel power; the sooner forgotten the better.

A mere glance across the front ends of this trilogy of reciprocating steam locomotives is sufficient proof to the contrary. Consider Missouri-Kansas-Texas No. 406, for instance, and observe the high-born appearance of her neat, sheet-steel pilot, graphite smokebox, sporty headlight and white-rimmed engine truck wheel. Or go beyond to the old Burlington workhorse, No. 2964. Here is the tired and belabored look, the engine bereft of trim lines and encased in the accumulated grime and grease of many miles. Not an elegant "investment," perhaps, but seemingly a sturdy, dependable, unexcitable machine. Now in-

spect Missouri Pacific's No. 6608 for the exemplification of self-appointed majesty. This big dowager pompously shoves her solid, retractable-coupler pilot out front, coher her feedwater heater rigging about her thick stack, and holds her headlight in a respectable position.

I am inclined to believe that our drab and uninformed friends have never paused in the dull illumination of roundhouse to listen at length — to hear the whispering steam, the thumping talk of cross-compound pumps, or the full-throated roar of an open blower. Ha! they heard the occasional creaks and groans from a lukewarm boiler and have they heard the single dismally echoed toll from a locomotive bell? I doubt it. I doubt because the man who enters a roundhouse with a responsive mind leaves it with an imaginative insight into such matters. The steam locomotive (like these individualist Pacifics) is a material creation, a capital asset, an investment of so many dollars and so many cents. Of course. But it is also something indefinably more, for it looks and operates as if possessed of human frailty and steadfastness. — D. P. M.



UNION STATION - PORTLAND, OREGON - CROSS & DIMMITT #430

Served by: U.P., S.P. & S., G.N., S.P., N.P.

ADD — ERROR
Deduct " DATE
DATE
Total

Add Working Fund
Total to be Accounted for
Cash to Agent
Agent's Signature
Cash to next Seller
Next Seller's Signature
Total Accounted for

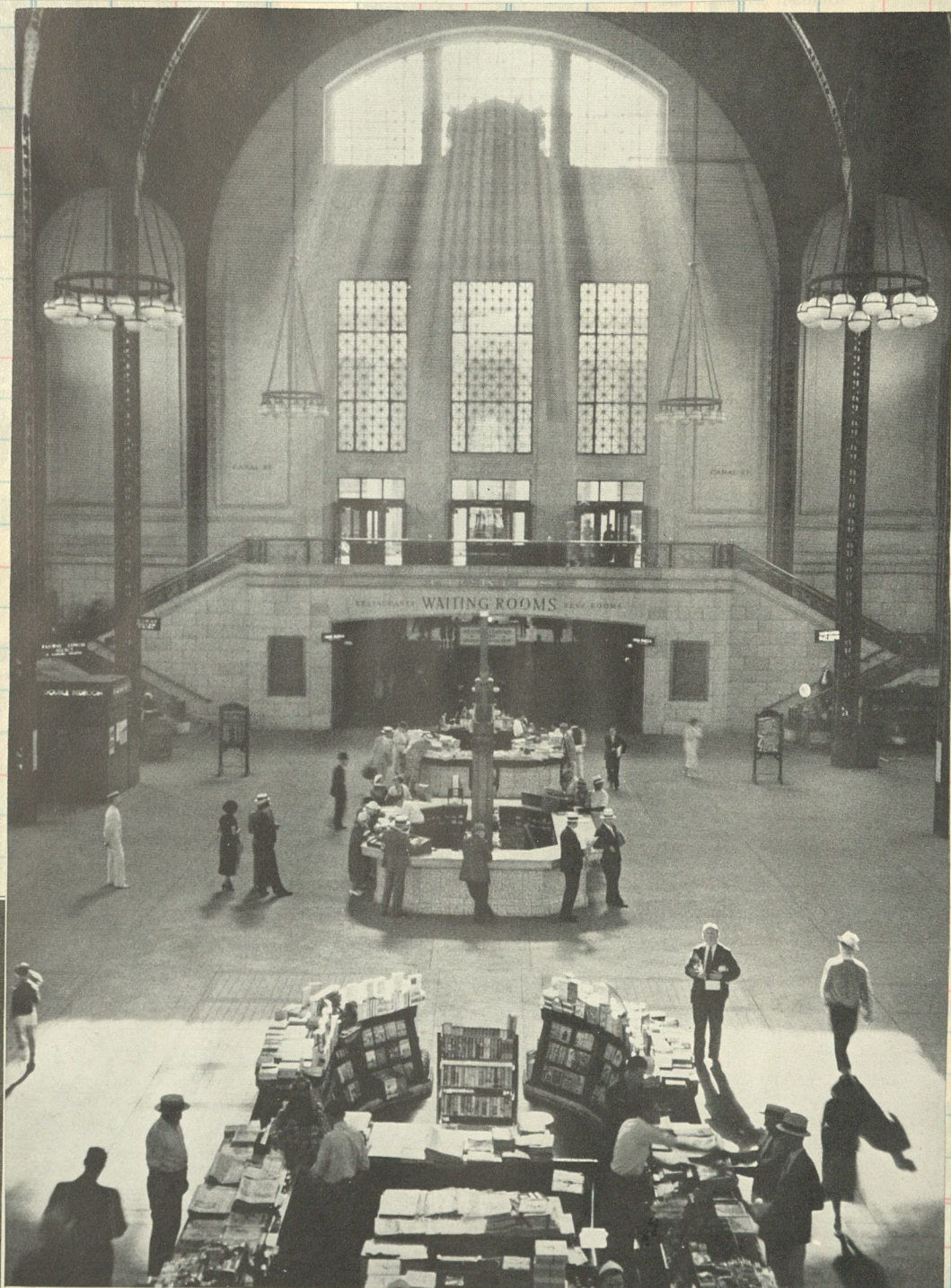
Chicago Union Station Is Formally Opened

Passenger Terminal Project Which Has Been Under Construction for Several Years Placed in Service



Looking Across the Concourse Toward the Main Waiting Room.

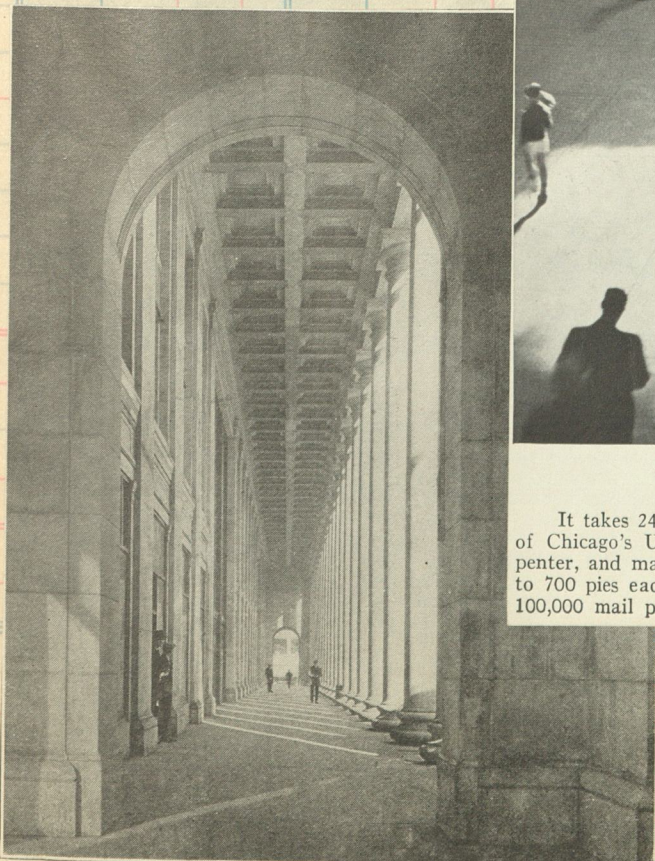
Served by the Alton, Burlington, Milwaukee and Pennsylvania



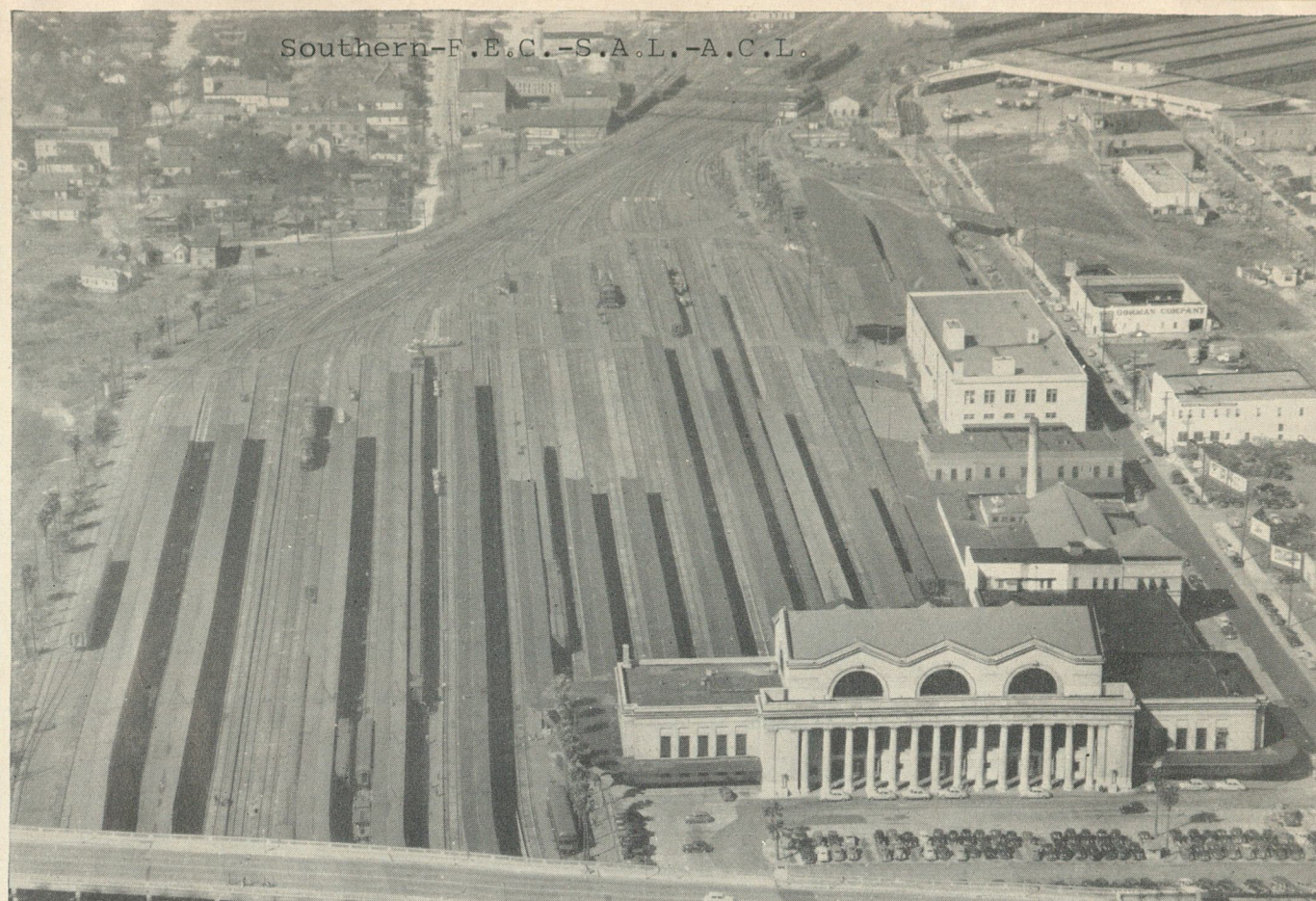
Photograph by J. Baylor Roberts

"CAN I CARRY MY CANARY WITH ME ON A DAY COACH?"

It takes 24 people to answer 3,600 questions a day at the information booths and telephone inquiry room of Chicago's Union Station (page 28). Beneath the serene concourse and waiting rooms are electric, carpenter, and machine shops, an art studio, and kitchens that make 200 gallons of ice cream a day, bake 600 to 700 pies each morning, and wash 20,000 dishes every 24 hours. Mostly unseen by passenger eyes some 100,000 mail pouches are handled daily in this station.

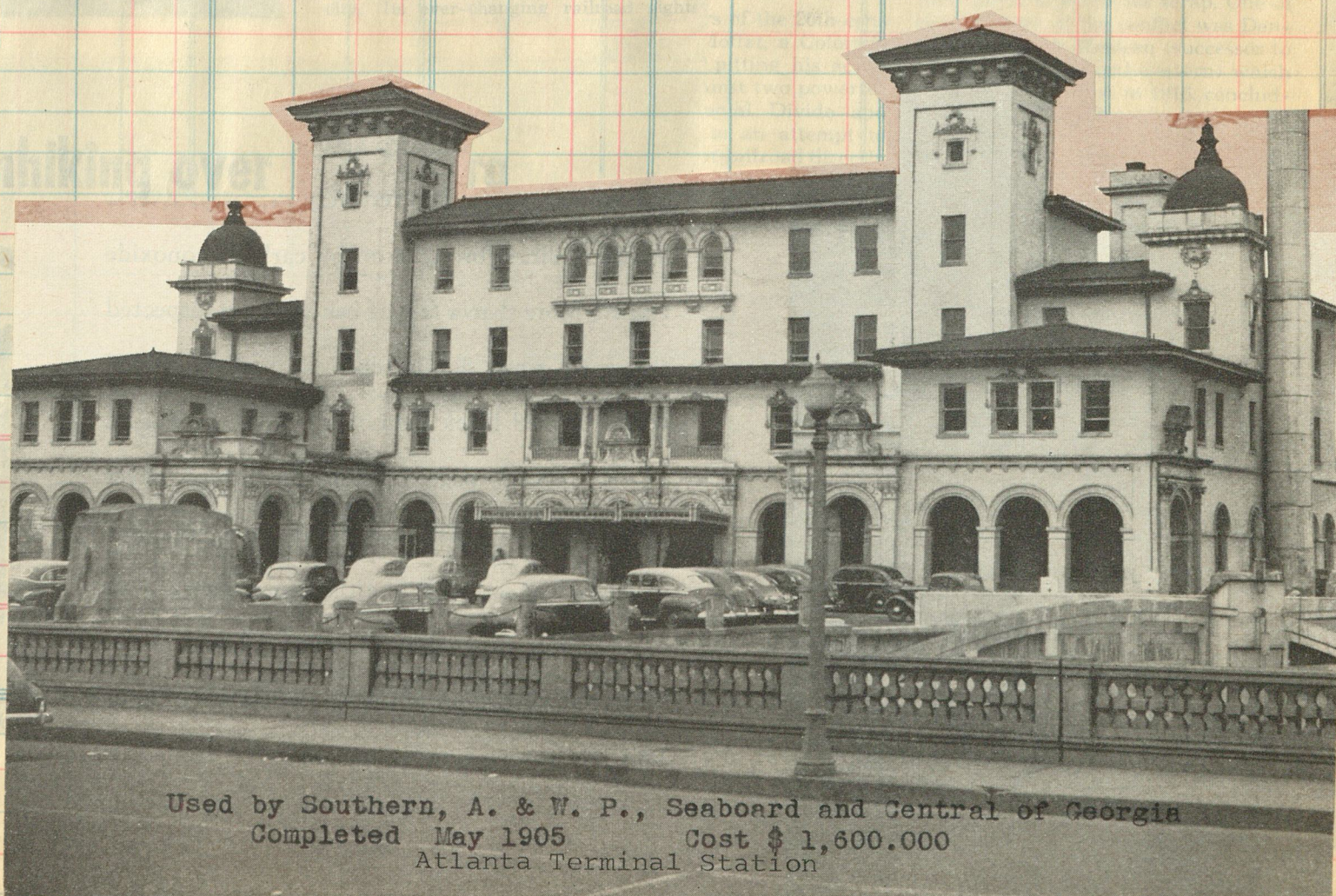


Entrance to Waiting Room from Lobby.



Royal palms stand guard before the white-columned entrance of Jacksonville Terminal. Through tracks at left are reached by a subway from the station's concourse.

GRAND CENTRAL TERMINAL - New York City. Considered by many as the most beautiful railroad terminal in the world! Served by the N.Y.C. and N.H. Tower of the New York Central Building in background.



Used by Southern, A. & W. P., Seaboard and Central of Georgia
Completed May 1905 Cost \$ 1,600,000
Atlanta Terminal Station

J. KEATING,
Manager.

*PLEASE NOTE CHANGES IN TIME OF
C., B. & O., C. & S. AND U. P. TRAINS.

STANDARD TIME, 105TH MERIDIAN

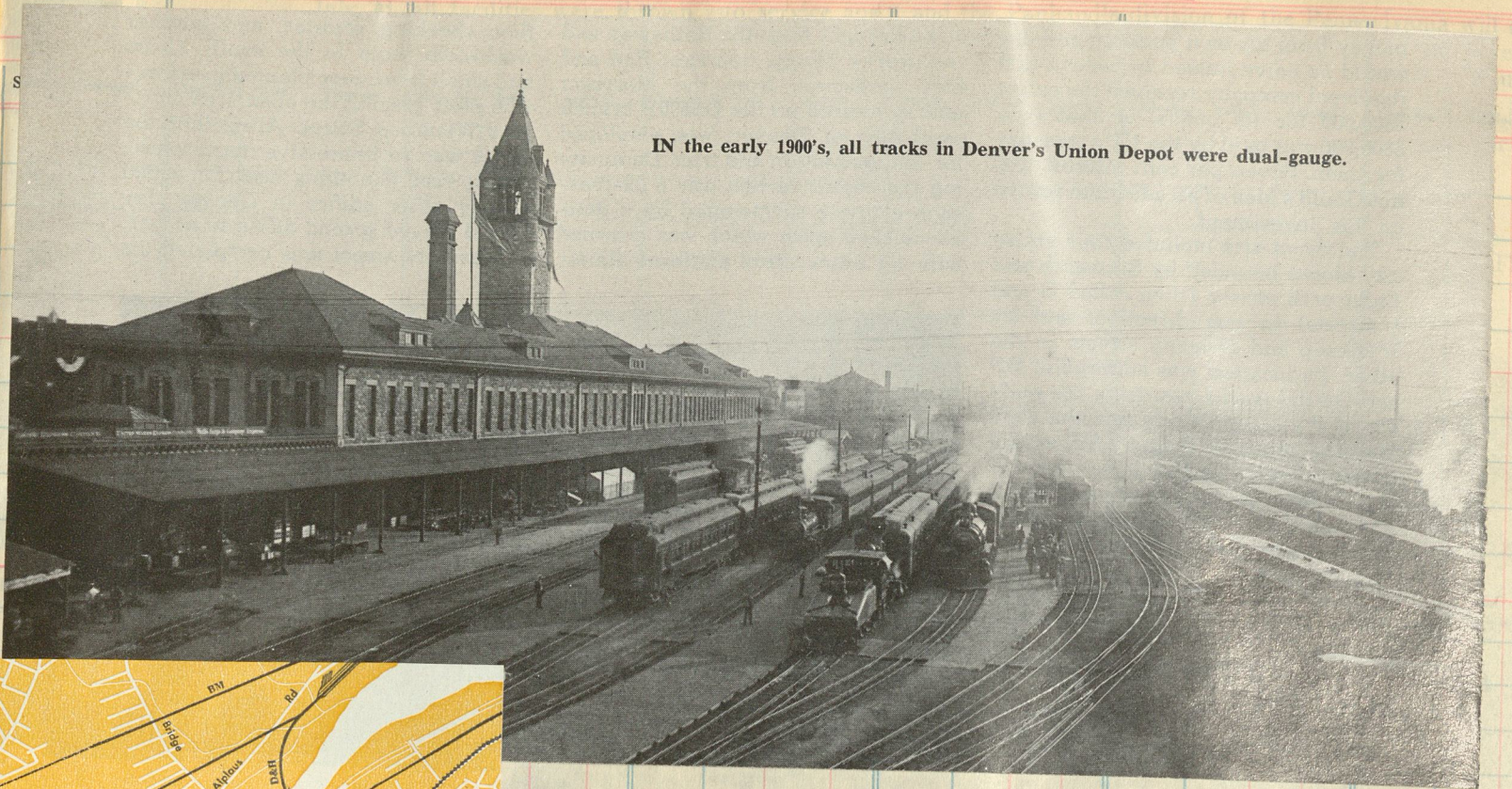
ON AND AFTER 12:01 A. M., MAY 31ST, 1914, TRAINS
WILL ARRIVE AND DEPART AS SHOWN WITHIN.

No. 2

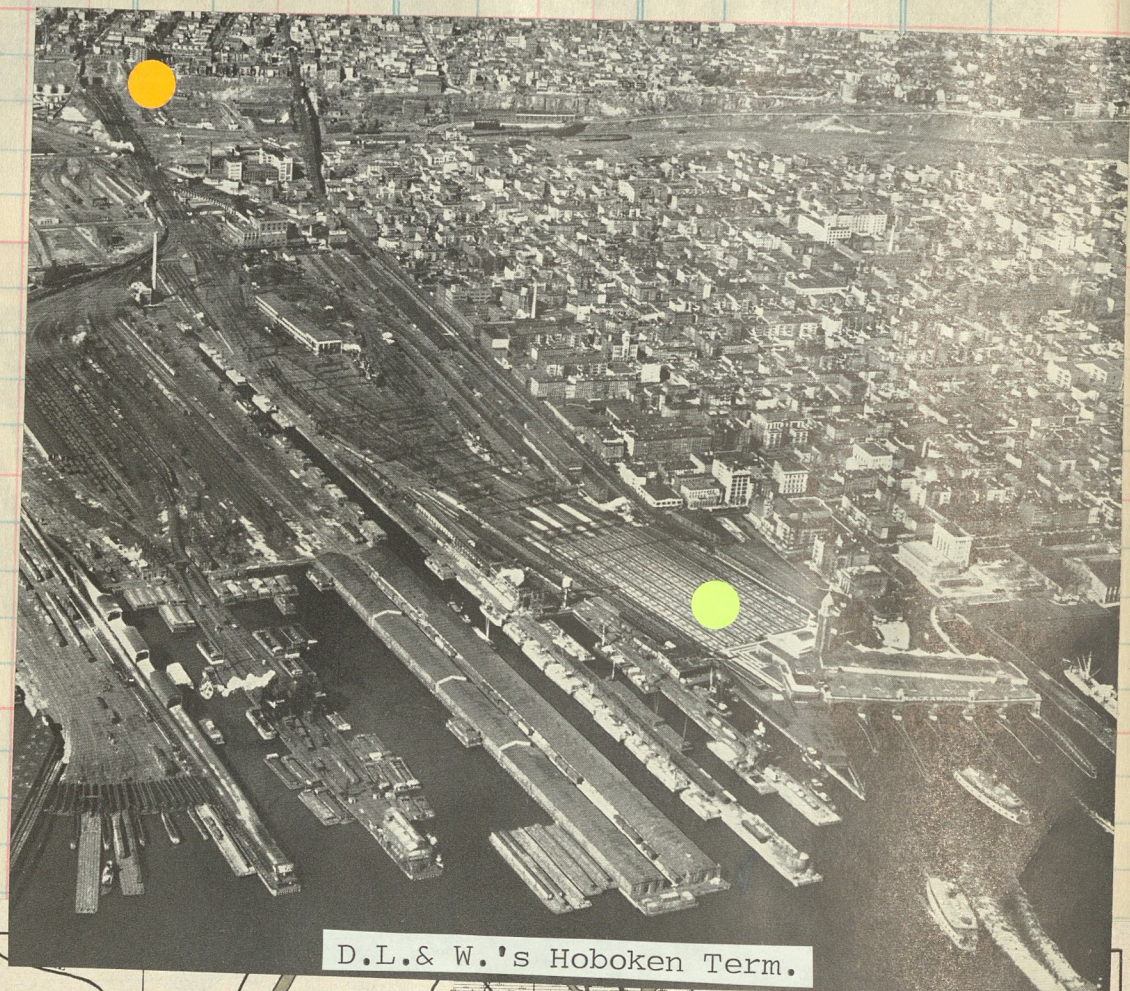
Depot Time Card

The Denver Union Terminal Ry. Co.

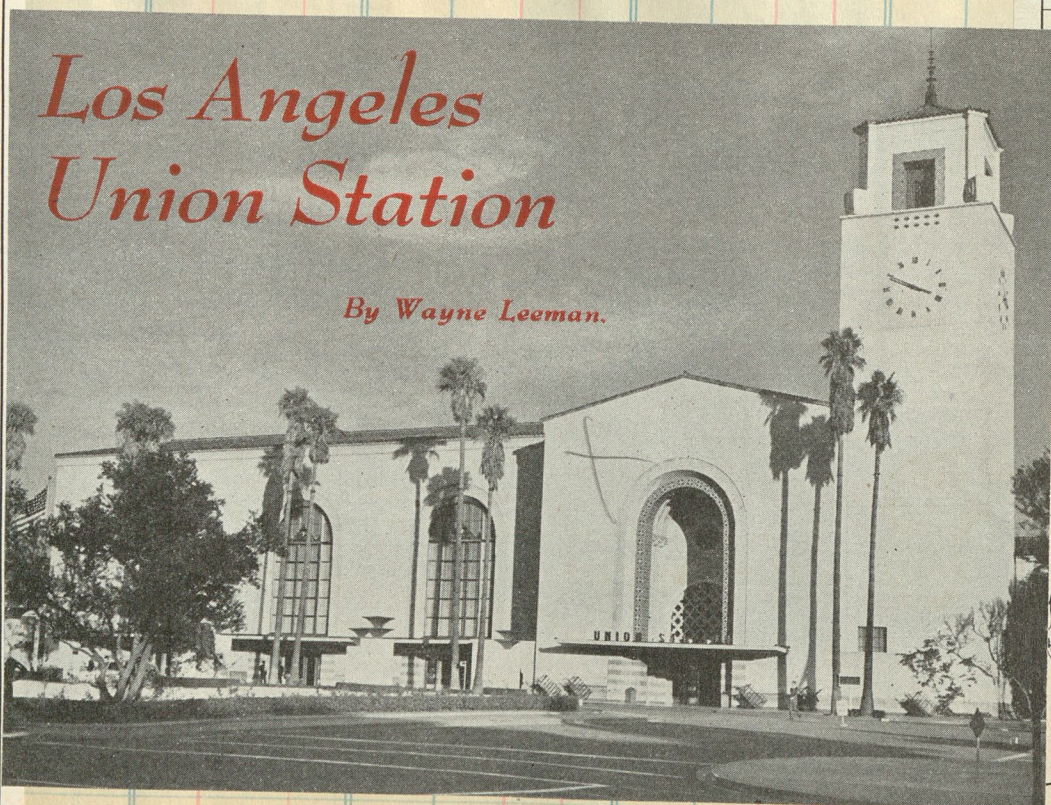
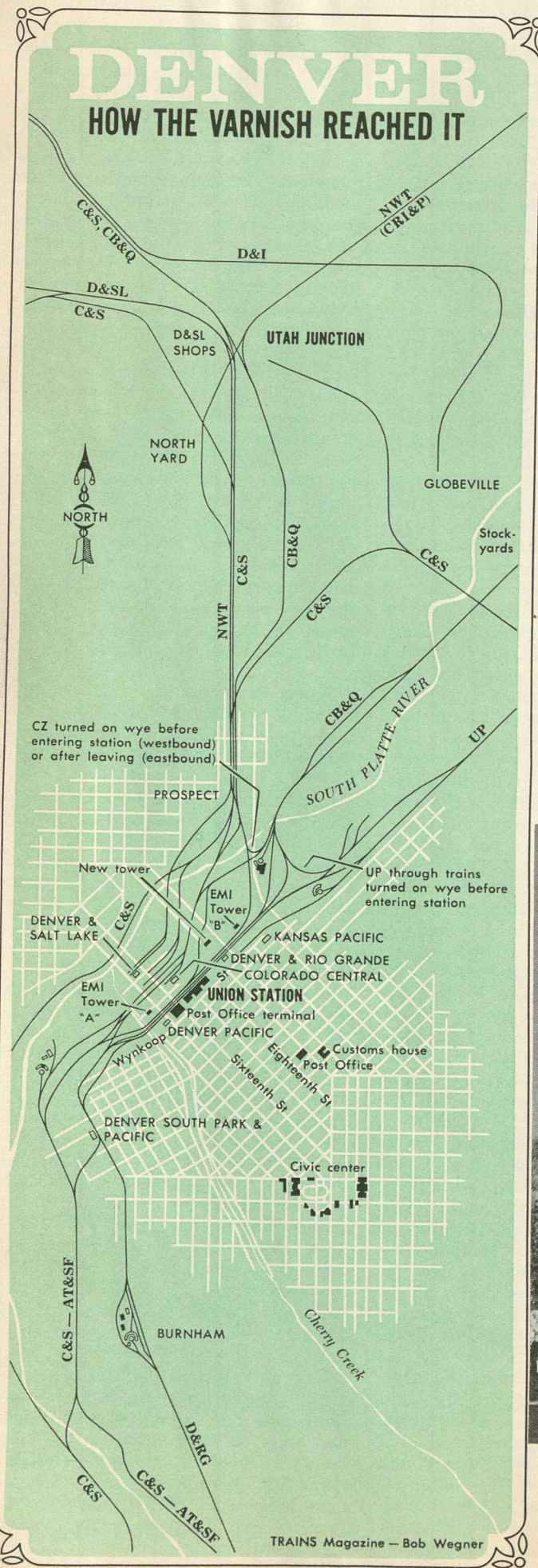
THE DENVER UNION TERMINAL RAILWAY COMPANY



IN the early 1900's, all tracks in Denver's Union Depot were dual-gauge.

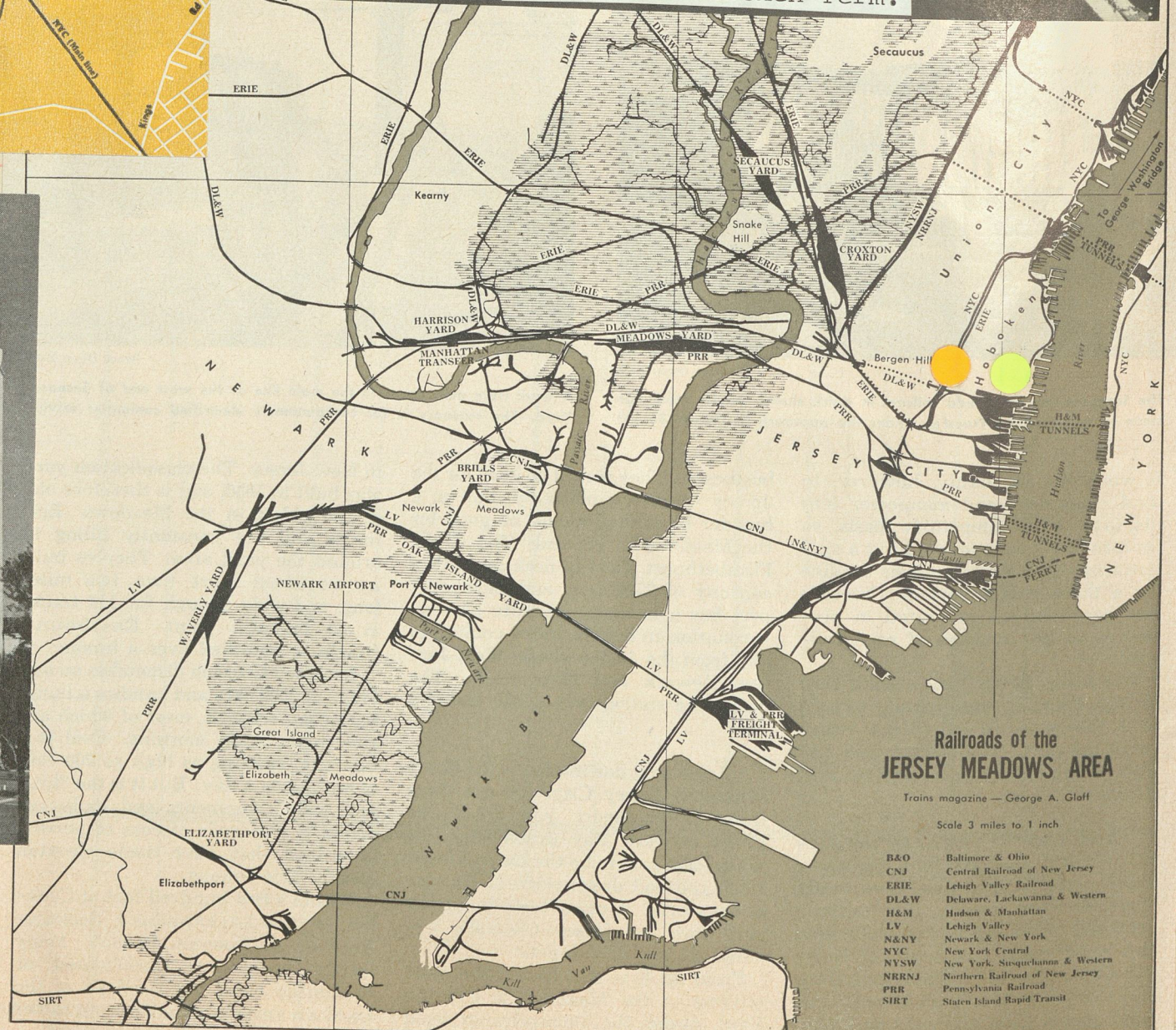


D.L. & W.'s Hoboken Term.



Los Angeles Union Station

By Wayne Leeman.



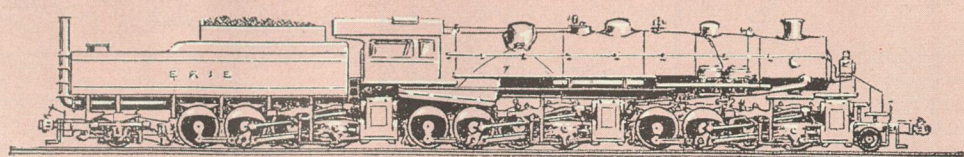
Railroads of the JERSEY MEADOWS AREA

Trains magazine — George A. Goff

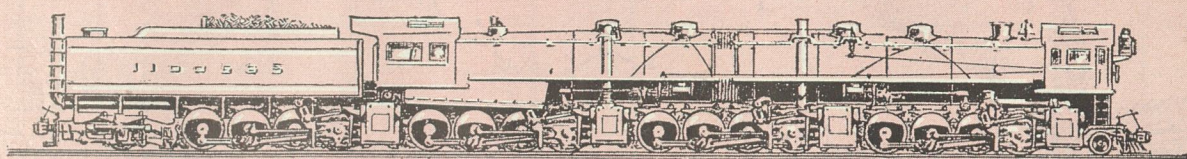
Scale 3 miles to 1 inch

- B&O Baltimore & Ohio
- CNJ Central Railroad of New Jersey
- ERIE Lehigh Valley Railroad
- DL&W Delaware, Lackawanna & Western
- H&M Hudson & Manhattan
- LV Lehigh Valley
- N&NY Newark & New York
- NYC New York Central
- NY&W New York, Susquehanna & Western
- PRR Pennsylvania Railroad
- SIRT Staten Island Rapid Transit

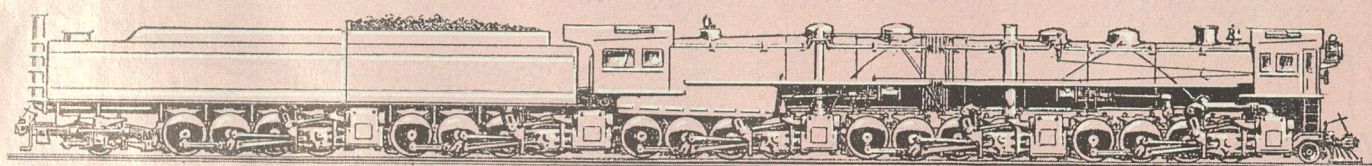
Such engines, as set forth by George Henderson, would never been successful. Results of Triplex operations had already proven this.



T R I P L E X

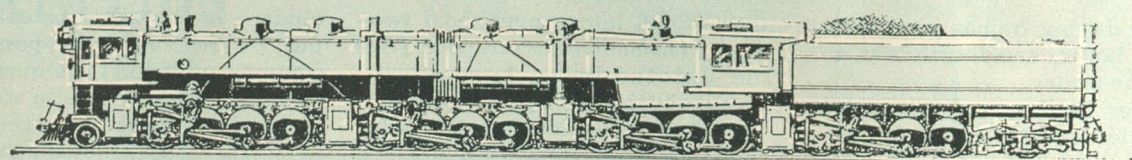


Q U A D R U P L E X

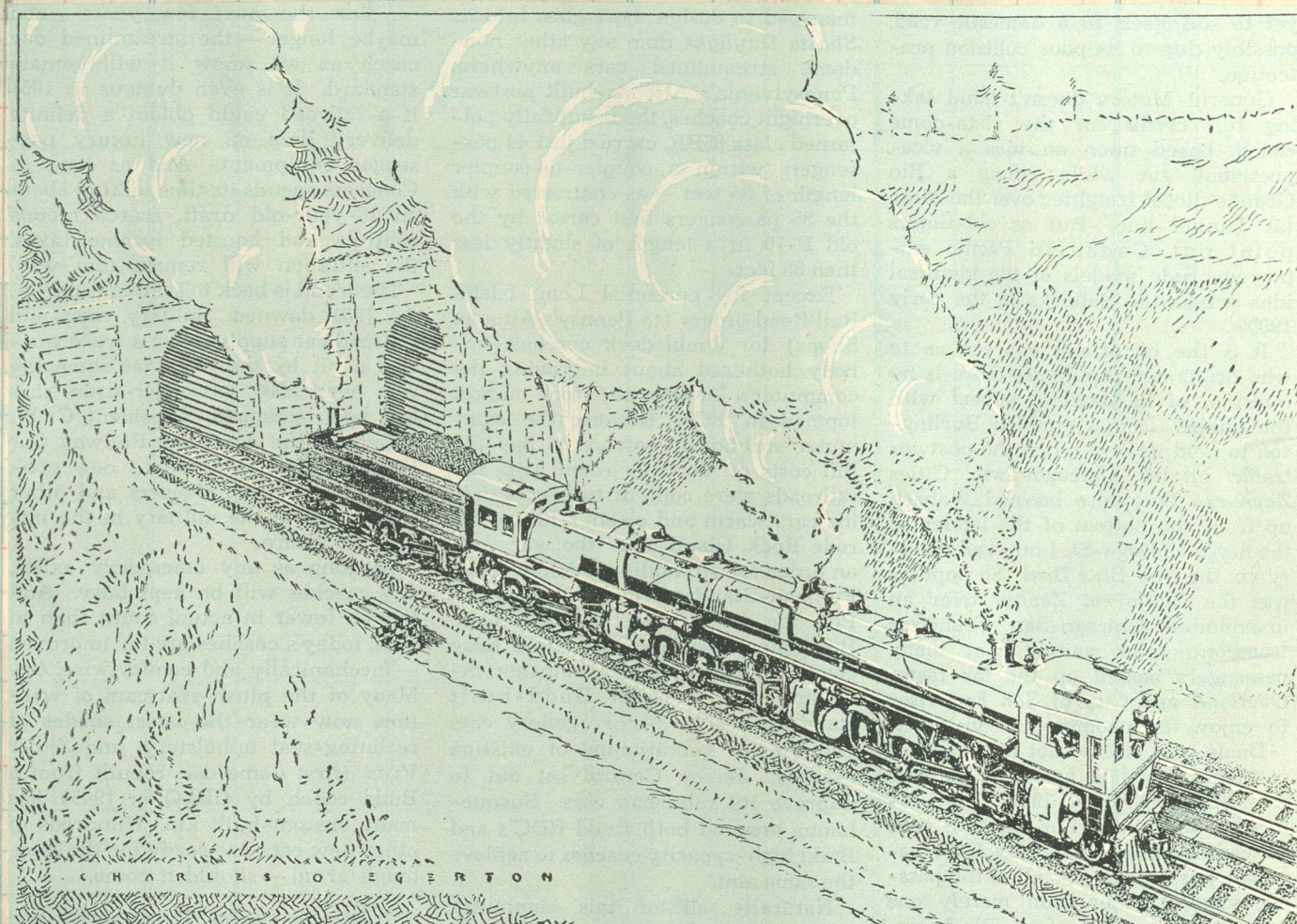


Q U I N T U P L E X

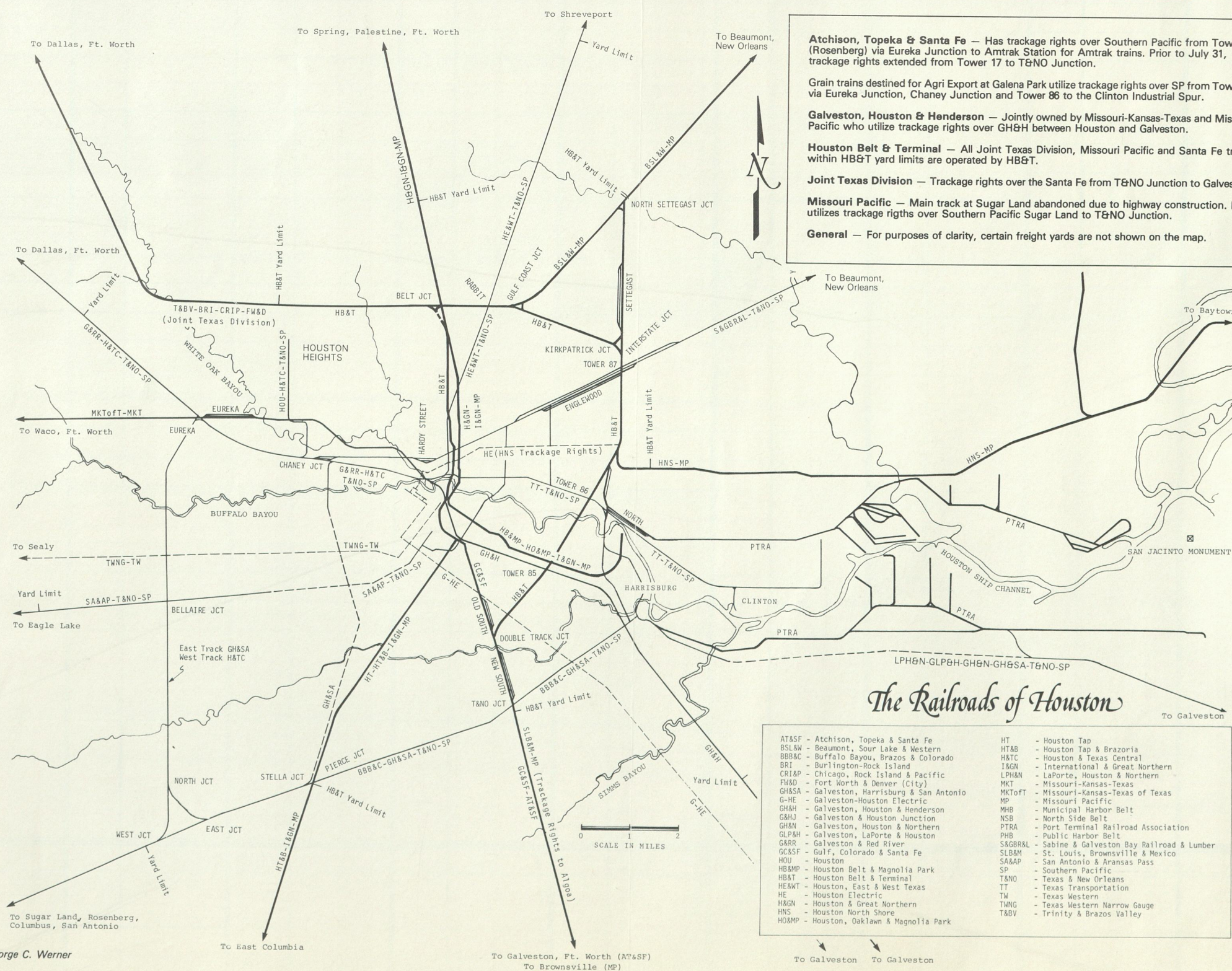
If the Baldwin Locomotive Works had built George Henderson's eight-coupled quadruplex and quintuplex locomotives, and if you were to stand back from the track and look at them, this is how they would compare to the Erie's Matt H. Shay, the one Henderson elaboration on the compound articulated principle that felt the pull of a heavy freight drag. The "quint" (bottom) would have had joints in both boiler and tender.



QUADRUPLEX STEAM LOCOMOTIVE OF 1915
HORSEPOWER 8000
TRACTION EFFORT 200000 LBS.
OVERALL LENGTH 129 FT 10 1/2 IN.



This sketch is of a compound articulated locomotive that was never built for the Santa Fe, on whose line it is shown in Raton Pass, or for any other road. It is Artist Egerton's conception of what George Henderson's 2-8-8-8-2 would have looked like had Baldwin built it.

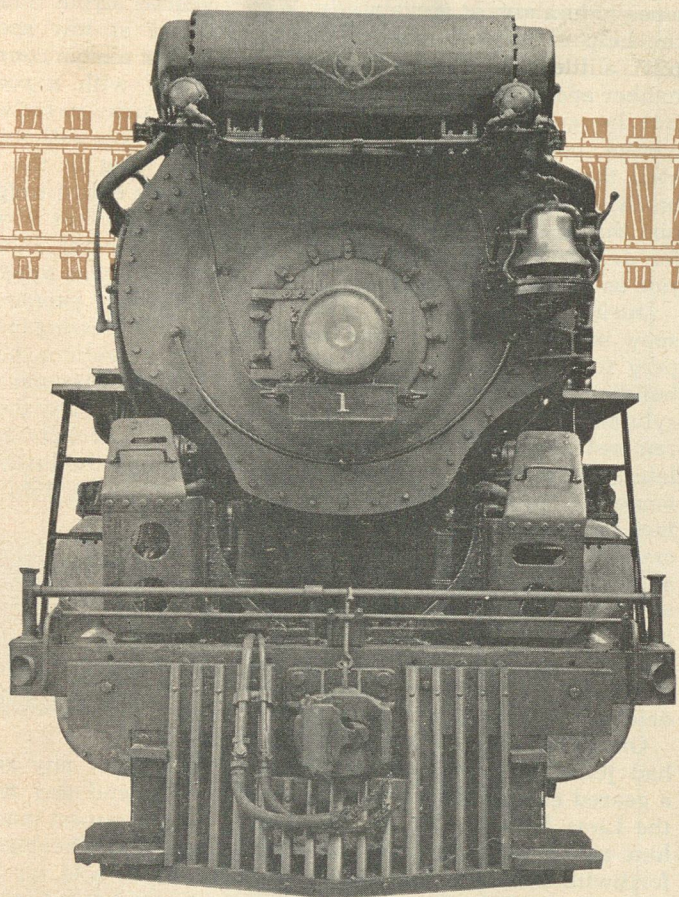


LIMA

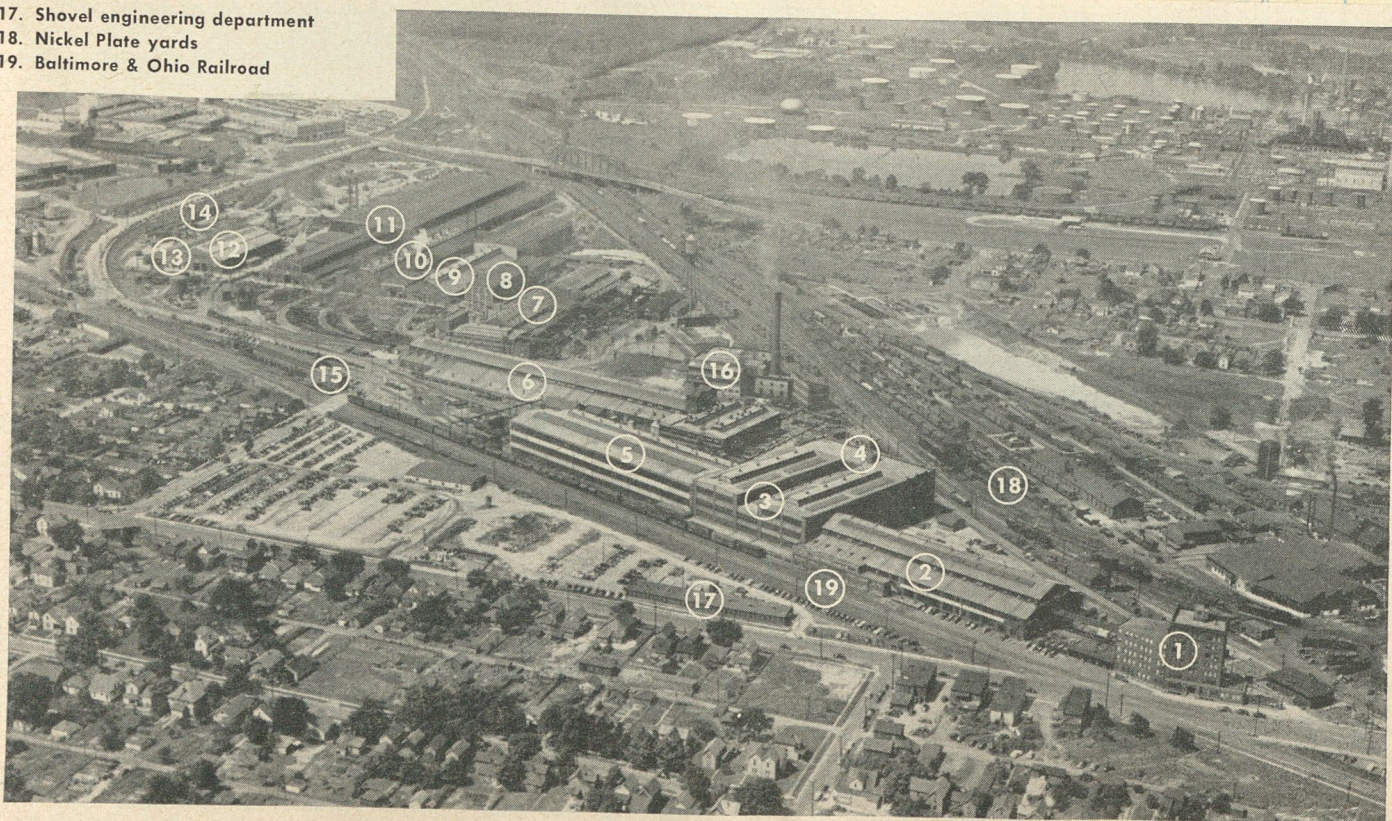
Clos. No.

SUPER-POWER

How the youngest builder in the nation turned out the most important steam locomotive of the century



1. Main office
2. Crosshead, guide and valve shop
3. Erecting shops
4. Locomotive storeroom and pipe shop
5. Wheel, rod and cylinder shop
6. Boiler shop
7. Iron foundry
8. Pattern shop
9. Tender and cab shop
10. Smith shop
11. Shovel and crane shop
12. Truck shop
13. Carpenter and paint shop
14. Laboratory and scale house
15. Hospital
16. Powerhouse
17. Shovel engineering department
18. Nickel Plate yards
19. Baltimore & Ohio Railroad



Lima Locomotive's plant lies on the south side of the Ohio city in a V between the tracks of the Nickel Plate (whose Lima Shops and freight yards may be seen here) and the Baltimore & Ohio.

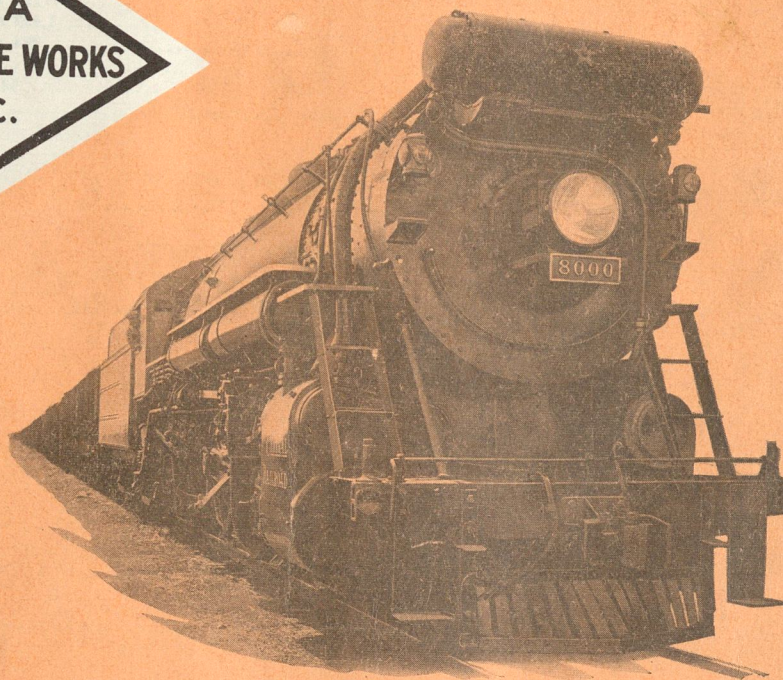
Railway Age

SECOND HALF OF 1922—No. 9

NEW YORK—AUGUST 26, 1922—CHICAGO

SIXTY-SEVENTH YEAR

Published weekly by Simmons-Bordman Pub. Co., Woolworth Bldg., New York, N. Y. Subscription Price U. S., Canada and Mexico, \$6.00; foreign countries (excepting daily editions), \$8.00, and \$10.00 a year including all dailies; single copies, 25c. Entered as second-class matter January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.



No. 8,000

c/n 6242

Design started by Lima Locomotive Works, Incorporated, January 1922.

Engine delivered to the New York Central by Lima Locomotive Works, Incorporated, June 6th, 1922.

Order for 75 duplicates placed by the New York Central on July 24th with Lima Locomotive Works, Incorporated, and 75 with another locomotive builder.

LIMA LOCOMOTIVE WORKS

Incorporated

Lima, Ohio

17 East 42nd Street, N. Y.

ET

Amou

LIMA MACHINE WORKS
LIMA, OHIO, U.S.A.

No 1 AUG. 1879

Richard J. Cook photos

THE LIMA LOCOMOTIVE

& MACHINE CO.

LIMA, OHIO, U.S.A.

No 1010 1905



31

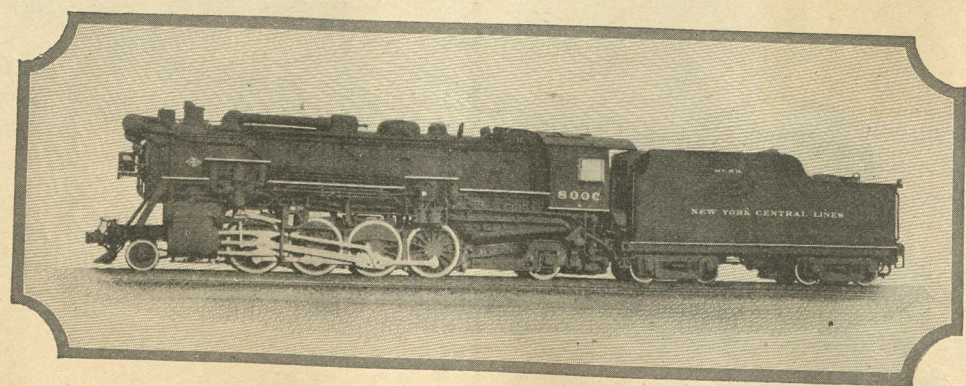
Big Class 1 power was Lima's stock-in-trade and had been since post-World War I, when the era of Super-Power dawned. It was in 1922 that the first super-Mikado had been produced for the New York Central's Michigan Central. The 8000 sported 74,500 pounds of tractive effort developed by 28 x 30-inch cylinders, 200 pounds of working pressure, and 63-inch drivers. In a short time the Central found that this was a really powerful locomotive and invested in the 2-8-2 heavily. The H-10's were a success.

12

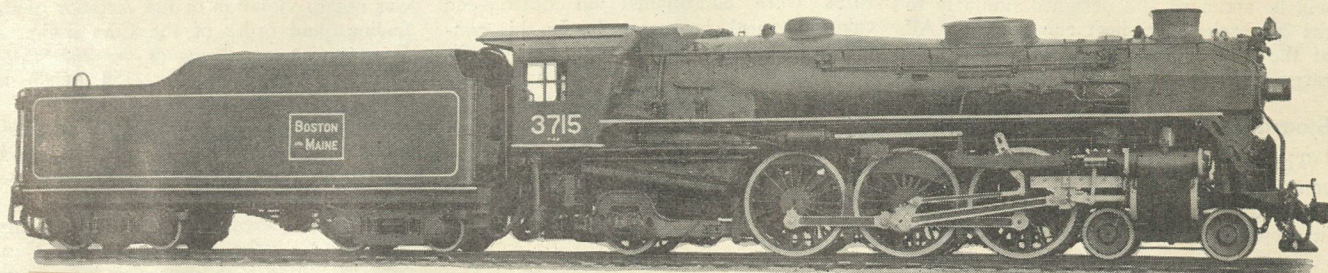
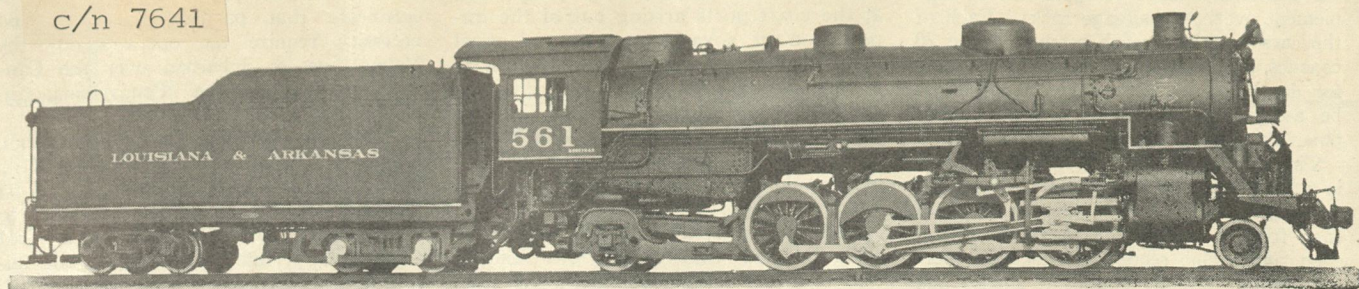
RAILWAY REVIEW

January 24, 1925

LIMA LOCOMOTIVES



c/n 7641

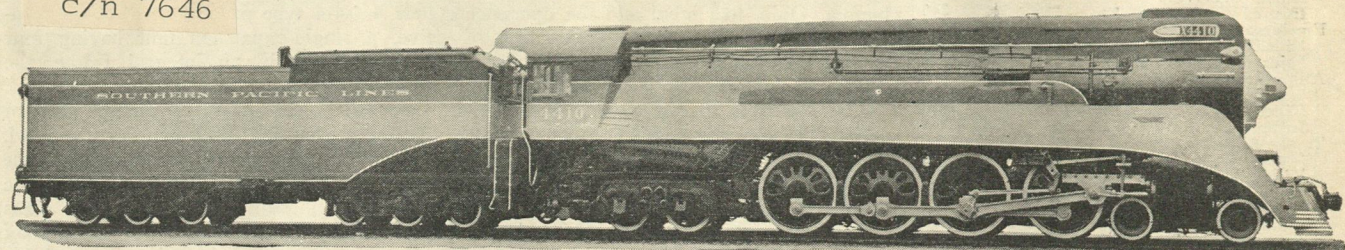


c/n 7655

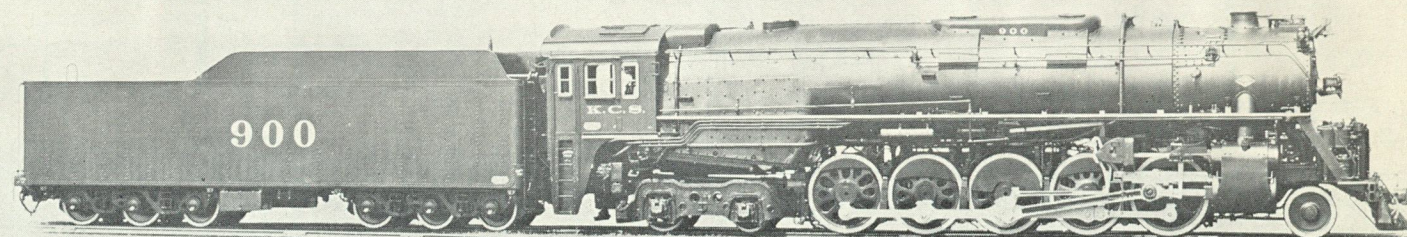
c/n 7627



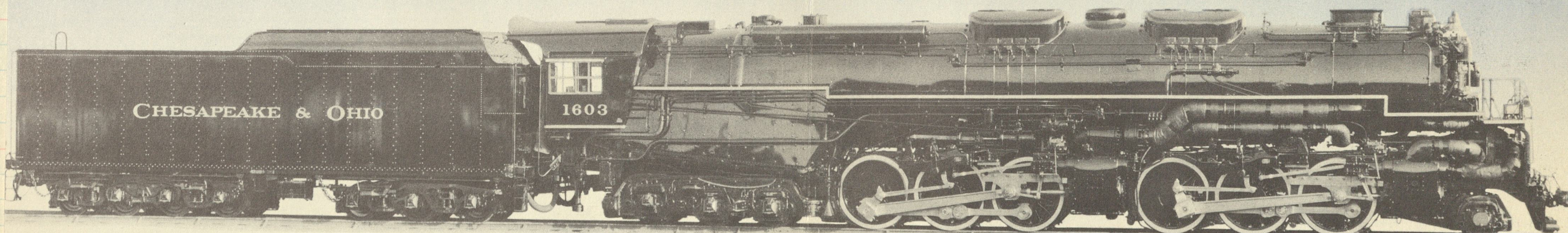
c/n 7646



c/n 7665



Built by LIMA for the Chesapeake & Ohio



c/n 7823



The 2-6-6-6 was purposely stopped with a 160-car, 14,083-ton coal drag on a level, tangent line for an acceleration test. The Allegheny was moving 19 miles an hour within a space of one mile and within 6 minutes; five minutes later she had the bituminous coal rolling along at 29 miles an hour.

Lima built 60 of the Super-Power articulateds for the C&O and there is talk that the road wishes it had ordered more of them before Lima closed up its order books in 1951.

One of the ten 2-6-6-6 type articulated mallots, which have been christened the "Allegheny Type," and which were recently delivered by Lima to the Chesapeake & Ohio Railway. This marks the inauguration of a fleet of locomotives entirely new in design. The ordering of this radically different type of Super Steam Power by the C & O is indicative of the steps being taken by railroads all over the country in ordering Modern Power that is designed to meet today's demands for heavier loads hauled at higher speeds.

This new fleet of "Allegheny Type" locomotives will be used by the Chesapeake & Ohio to speed up freight transportation by increasing train loads and reducing the running time over the steep grades of the Allegheny Mountains, without the use of helper engines. In addition to the original order for ten locomotives, the Chesapeake & Ohio has placed an additional order with Lima for ten more "Allegheny Type" locomotives that will be exact duplicates of those now being delivered.



LIMA LOCOMOTIVE WORKS, INCORPORATED
LIMA, OHIO



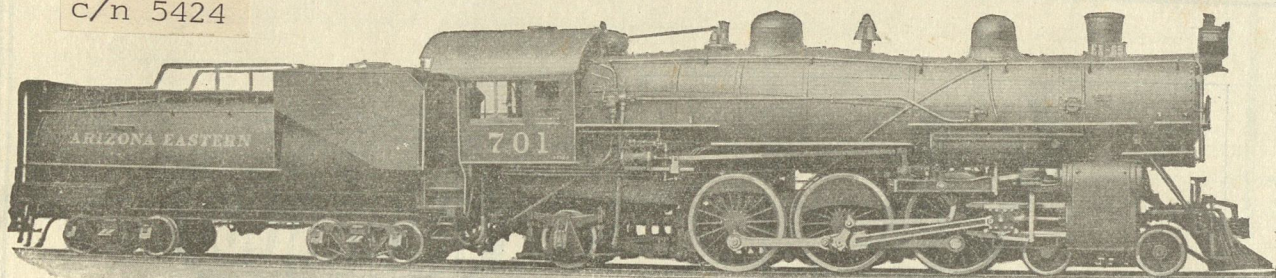
THE "M. J. BOND," ONE OF THE EARLIEST GEARED LOCOMOTIVES BUILT BY MR. EPHRAIM SHAY FOR LOGGING IN MICHIGAN

April 30, 1920

RAILWAY AGE

55

c/n 5424

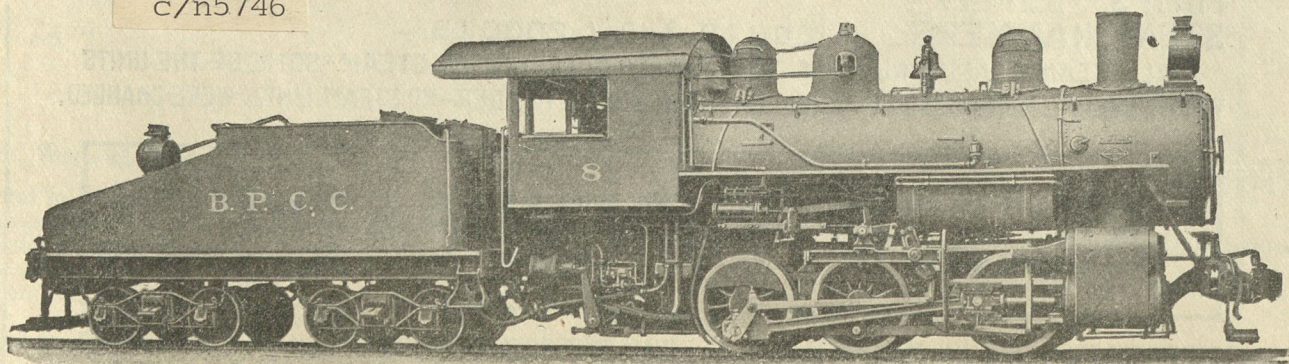


LIMA

Lima is prepared to duplicate existing locomotive designs, or Lima's Engineering Department is at your disposal to develop new designs, embodying your views, to meet specific conditions.

Lima Locomotive Works, Incorporated
Lima, Ohio 30 Church Street, N. Y. City

c/n5746



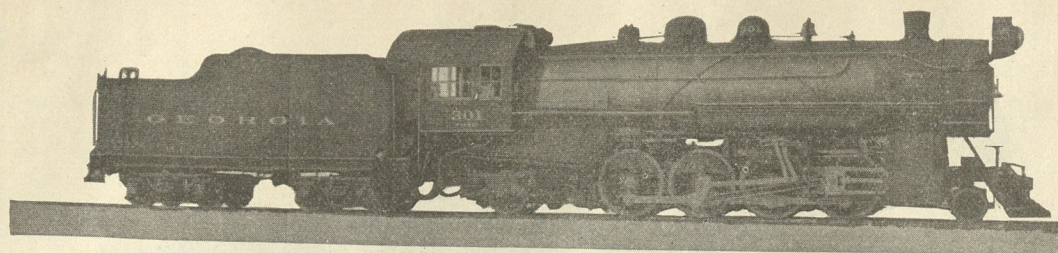
em

80

RAILWAY AGE

November 12, 1920

c/n 5003



EXPERIENCE

In deciding on your new locomotive needs take advantage of Lima's experience.

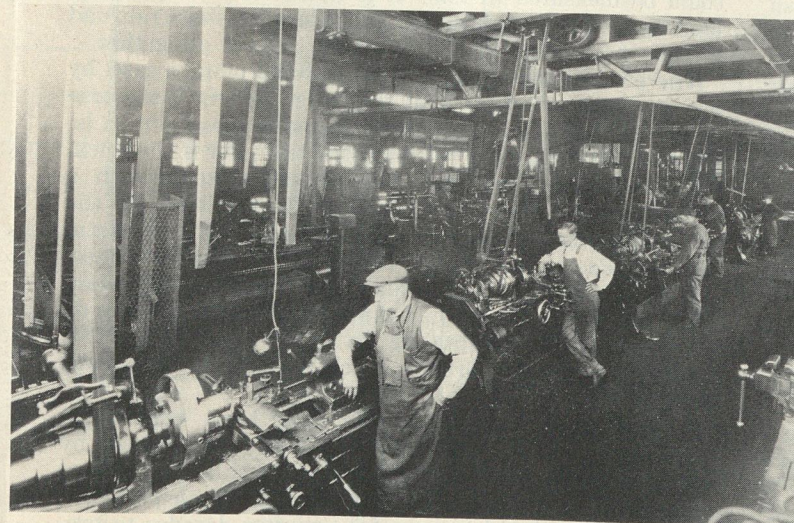
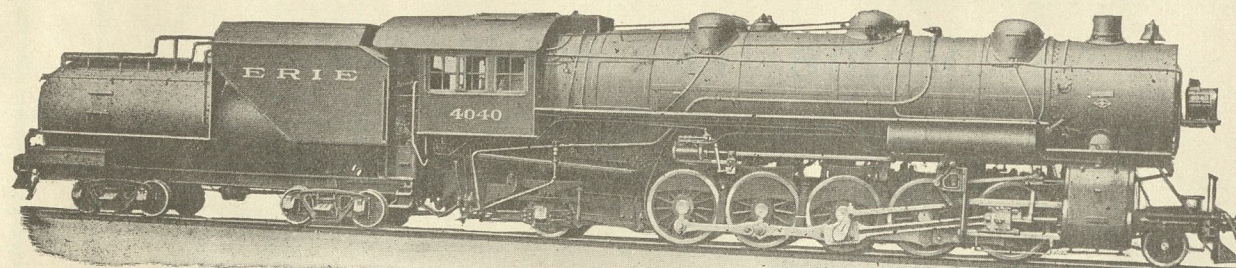
Lima is at your service either to build duplicates of existing power or to co-operate in designing locomotives that will even better meet your operating conditions.

Lima Locomotive Works, Incorporated

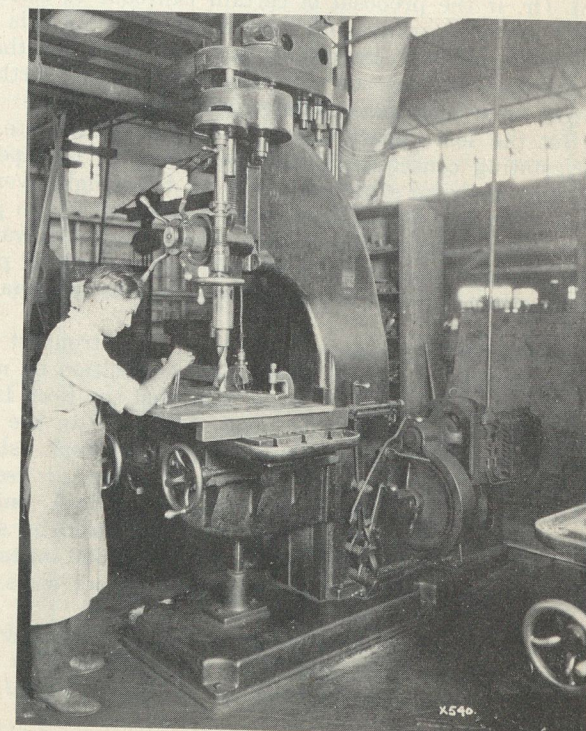
Lima, Ohio

30 Church Street, N. Y. City

c/n 5111

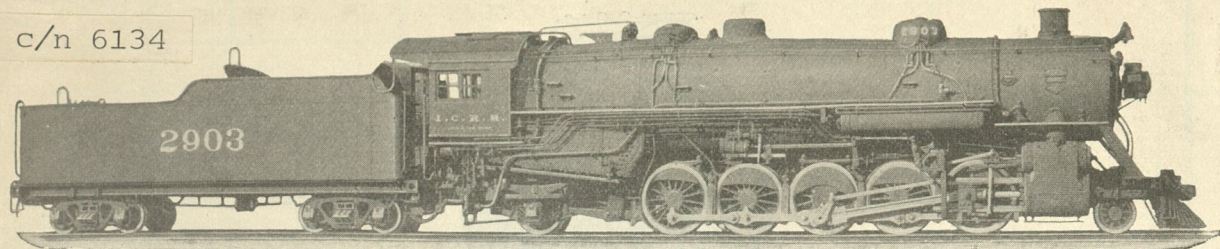


UNWEPT, unhonor'd, and unsung, to quote Scott . . . the men back in the shops of Lima without whose skills and sweat we would never have heard Shays in the woods or watched 700's build a fast-freight reputation for Nickel Plate or witnessed 4449 celebrate a nation's birthday. From left to right: A side rod takes shape on a forge; belt-driven lathes and their operators await the minutia of motive-power accessories; and a young machinist employs a divider to measure the work on his drill press. Remember these men and our debt to them.



LIMA LOCOMOTIVES

c/n 6134



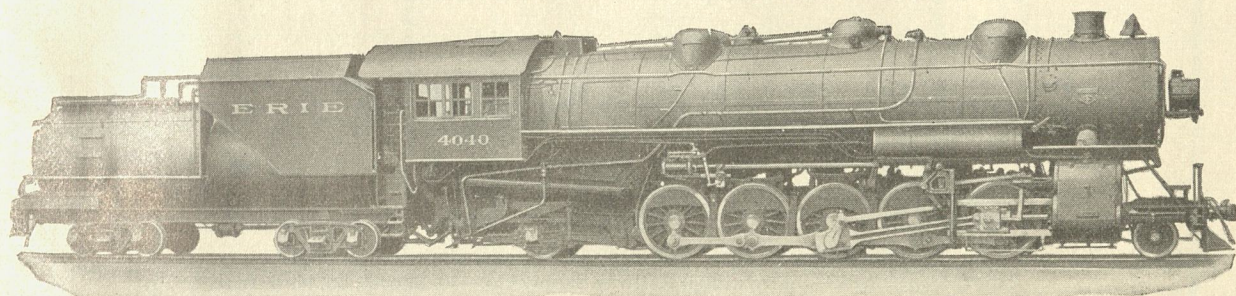
A Matter of Design

NEW locomotives present interesting possibilities.

With locomotives that are more efficient per pound of weight and per pound of fuel, runs can be lengthened and loads increased, thereby reducing ton-mile costs and effecting other operating economies.

We will be glad to co-operate in the design and building of locomotives that will better present records.

We have many facts and figures. May we go over them with you?

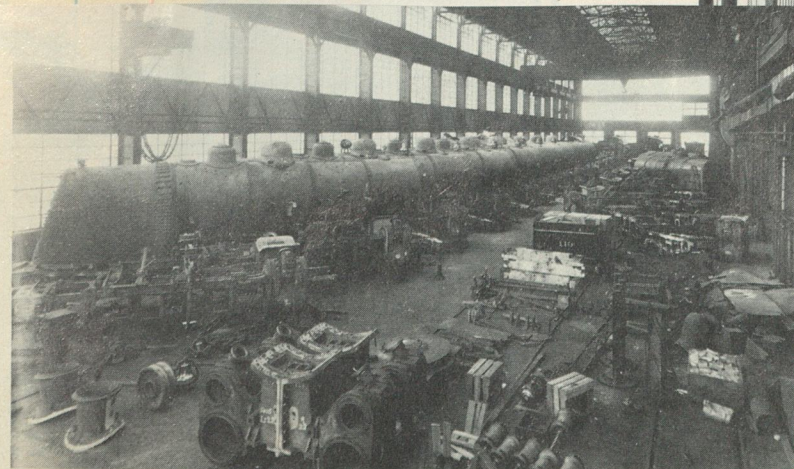
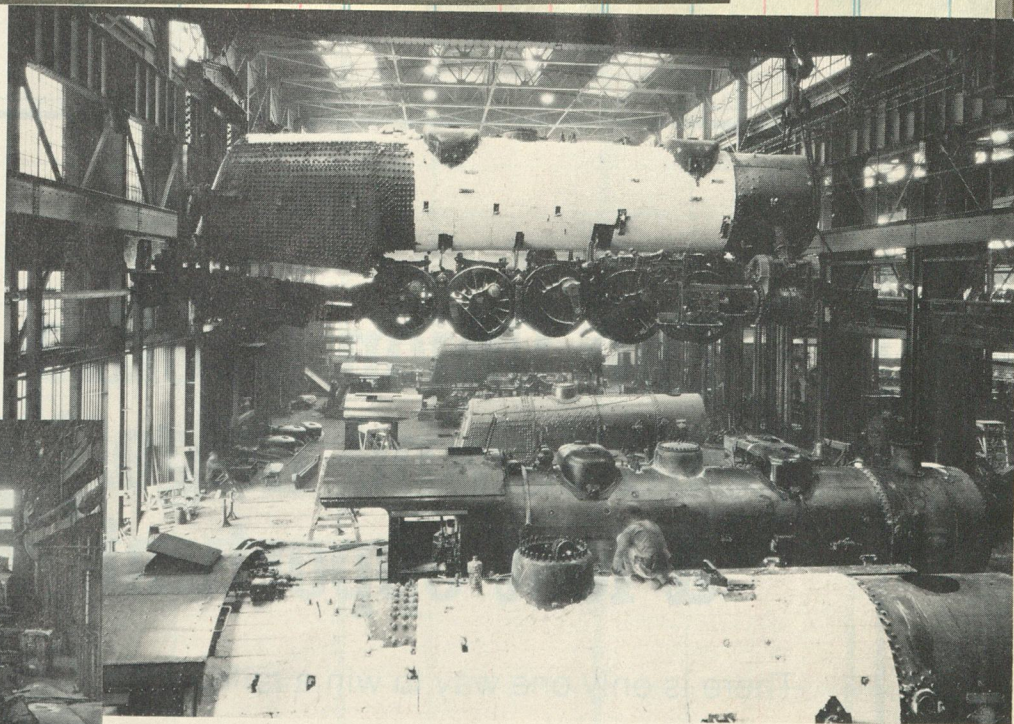


Lima Locomotive Works, Incorporated

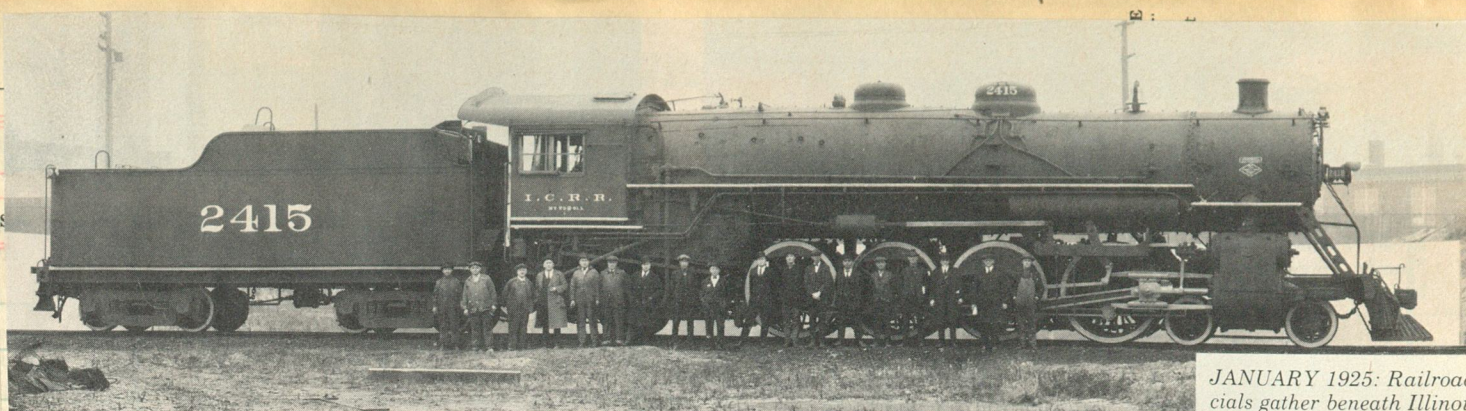
Lima, Ohio

17 East 42nd Street, N. Y.

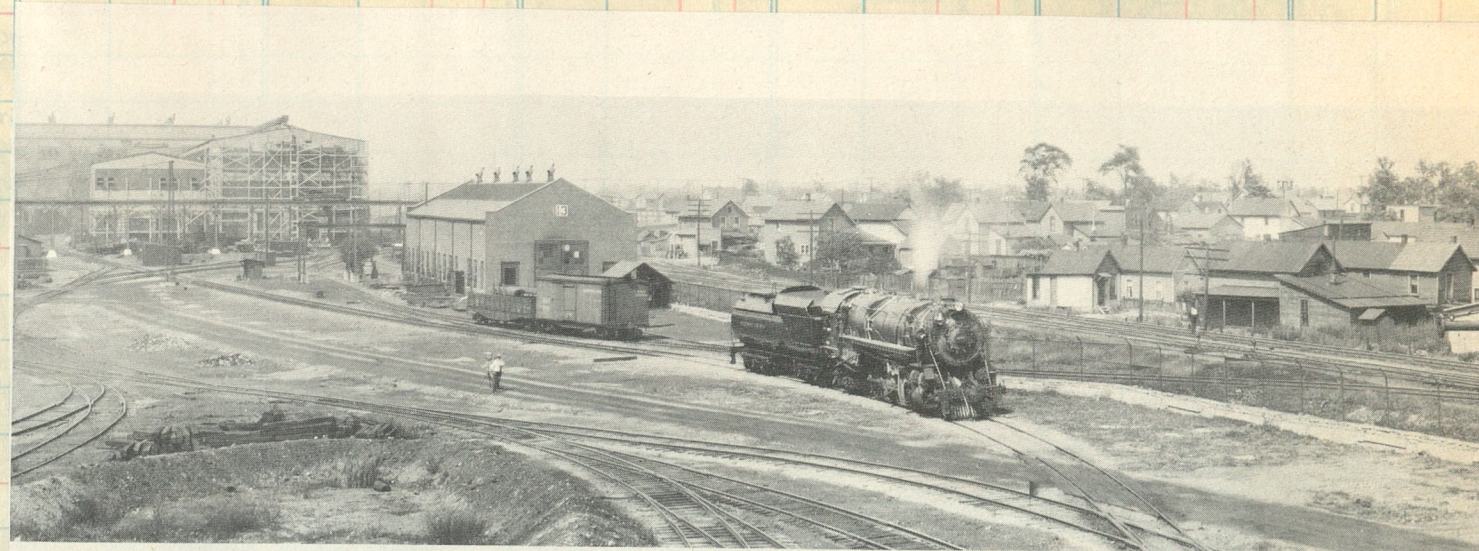
THE 150-ton Shaw shop crane carries partially lagged Baltimore & Ohio 2-10-2 6197 (see page 21) across a row of Southern 0-8-0's (a worker kneels on No. 1849) in the main erecting hall in June 1926. Lima has two decades of steam production left, but these are the last steam orders the plant will receive from these roads. Ironically, SR was the first Class 1 road to order Lima locomotives in quantity (15 0-6-0's in 1911), yet it will be one of the first to leave. SR, an early diesel convert, rebuffed new steam after the depression.



ONE-FOURTH of Lima's first big order for road power from a Class 1 carrier—Illinois Central 2-8-2's 1701-1750—fills the shop in 1915. Unfortunately, Lima entered too low a quote to make money on the order and was forced into financial reorganization the next year. But IC remained a staunch customer, buying hundreds more Mikados plus Mountaintops, Berkshires, and 0-8-0's.



JANUARY 1925: Railroad and Lima officials gather beneath Illinois Central 4-8-2 2415 for a souvenir photo of the first engine of the order, a sales tradition.



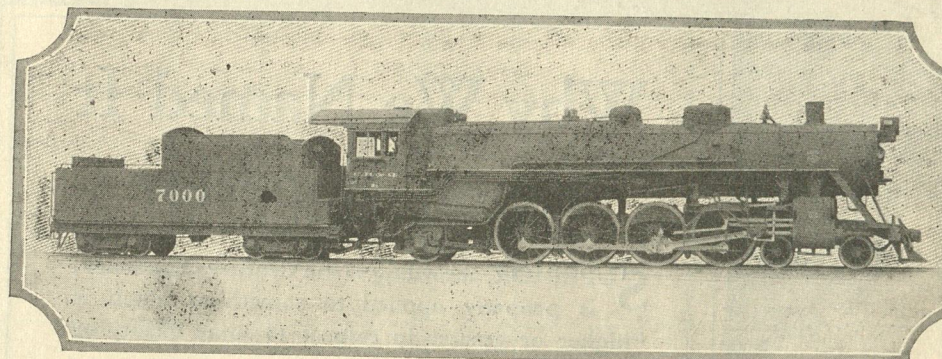
"BIG SIX" 2-10-2 6197 of the Baltimore & Ohio takes her first steps in July 1927 in Lima's backyard as Lima photographers watch.

January 6, 1923

RAILWAY AGE

101

c/n 6248



In Buying Locomotives

IS it the most economical locomotive obtainable?

This should be the one consideration in buying new power.

When a locomotive has a useful life of 20 to 30 years, first cost is overshadowed by even a slight operating economy.

An apparent unimportant detail in design may more than save the entire cost of the locomotive before its retirement.

What then, is more important than the assurance that your new power will represent the latest advances in locomotive design?

This assurance is yours with the cooperation of Lima's engineers on your new designs.

Lima Locomotive Works

Incorporated

Lima, Ohio

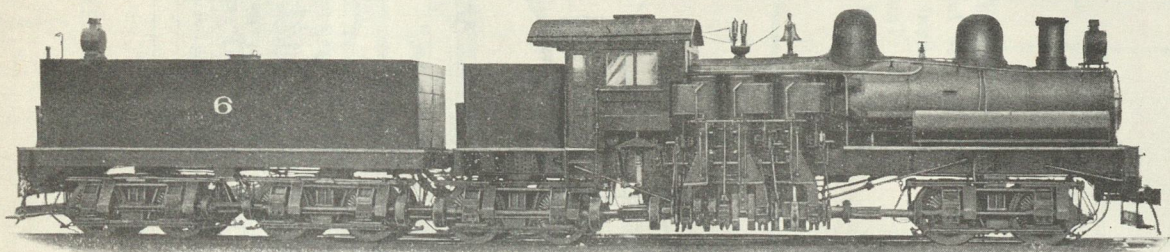
17 East 42nd St., New York

THE EFFICIENCY OF RIGHT BEVEL GEARS IS 92%

ARE YOUR SIDE RODS DOING ANY BETTER?

This is the Service Obtained by the

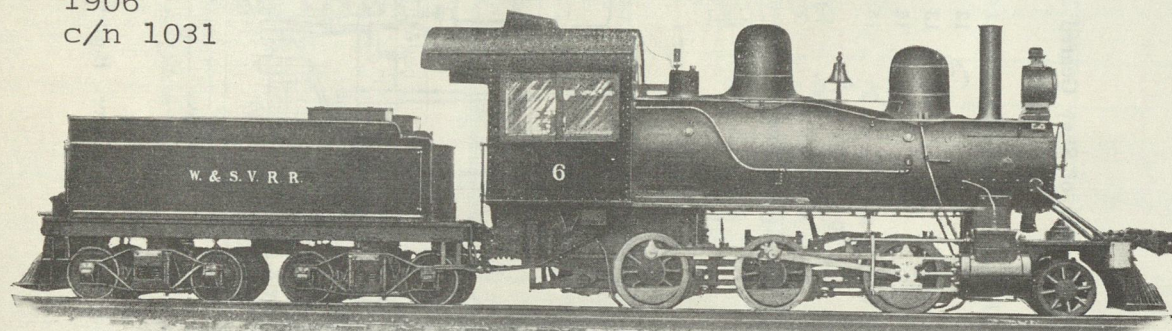
SHAY GEARED LOCOMOTIVE



150-Ton Shay Locomotive built for C. & O. Ry.

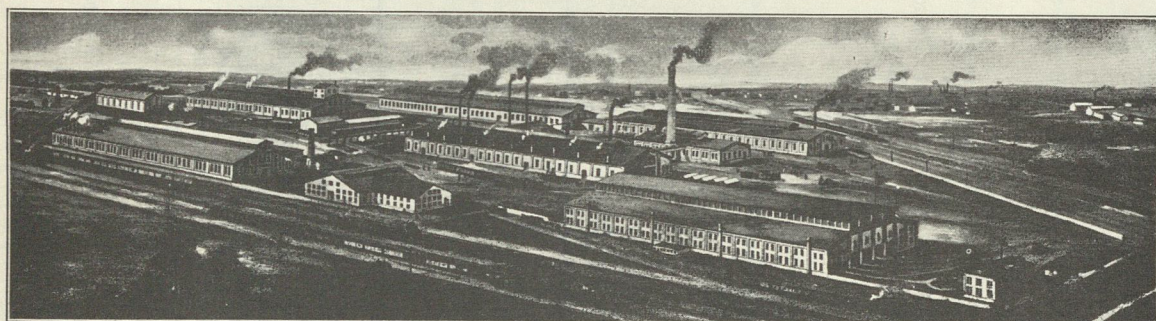
For Heavy Freight and Combination Traffic on Branch Lines, Mountain Divisions or any sort of a railroad where Heavy Grades and Curves are found, the SHAY cannot be surpassed. Shows from 10 to 15 per cent. economy per ton-mile over other types doing the above work. Better Investment. Write for full particulars. Catalog No. 13 gives general information about 150-ton size, as well as other sizes. Built in weights 10 to 150 tons.

1906
c/n 1031

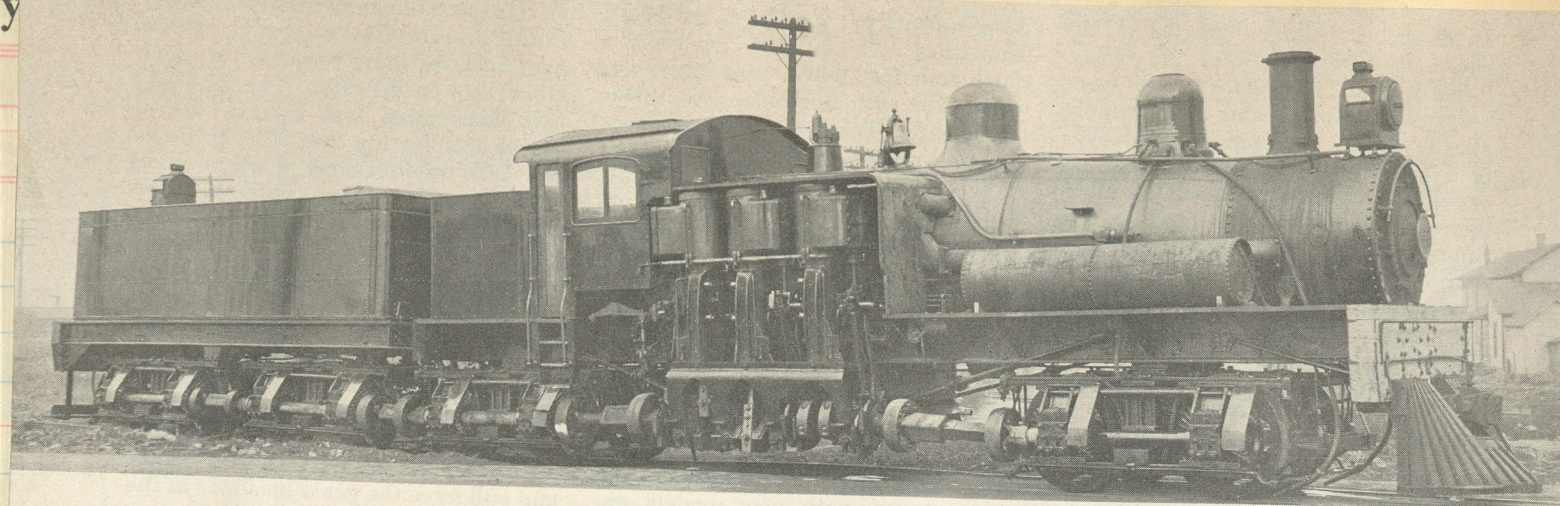


Wilmar & Saline Valley (Gates Lumber Co.)
Mogul Locomotive

Our Direct Locomotives embody the most modern construction, and we are prepared to build Locomotives of this class of any design desired in sizes up to 20x26 cylinders. Catalog No. 14 gives information and illustrations Locomotives recently constructed. Give us a call.



THE LIMA LOCOMOTIVE AND MACHINE CO.
111 THIRD STREET, LIMA, OHIO, U. S. A.



COMMON CARRIERS began to express an interest in Shays—big ones. Sometimes enthusiasm waned. Southern 4001 (and sister 4000) of 1907 were later sold to the Chesapeake & Ohio.

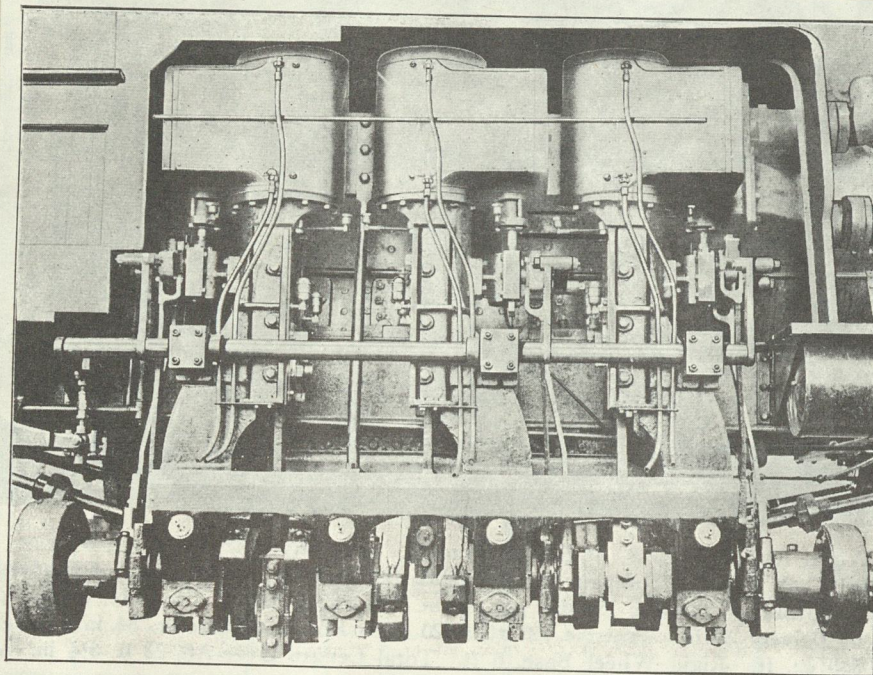
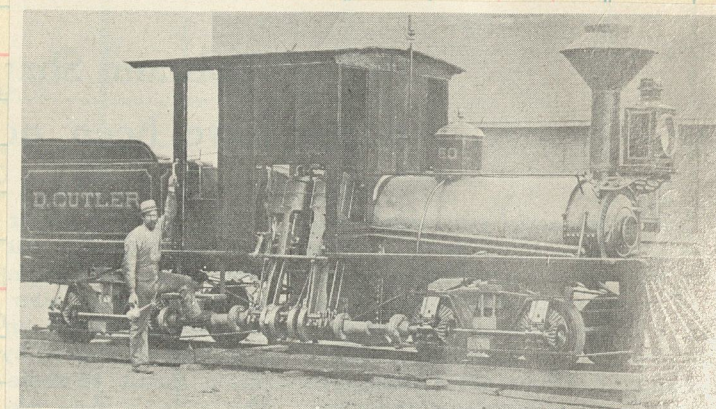


Fig. 132. Cylinders of Shay Geared Locomotive.
Lima Locomotive & Machine Co.



EARLY MODEL straight-boilered Shay, destined for service in Michigan, stands at the works on September 15, 1882.

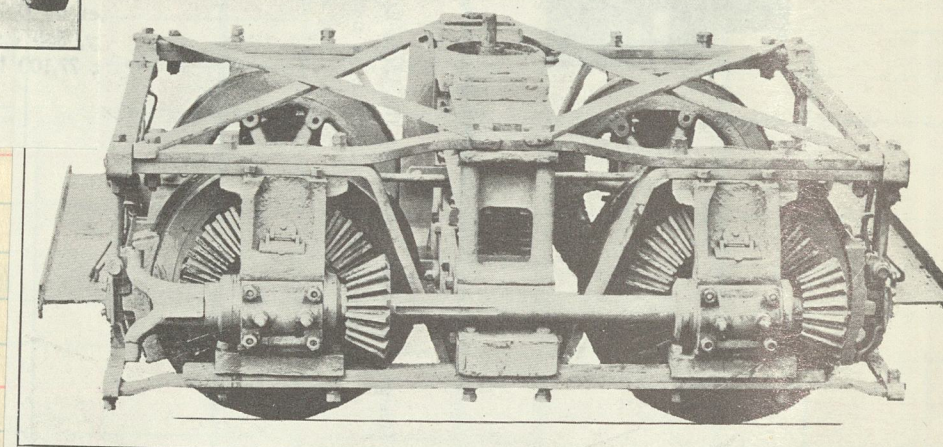
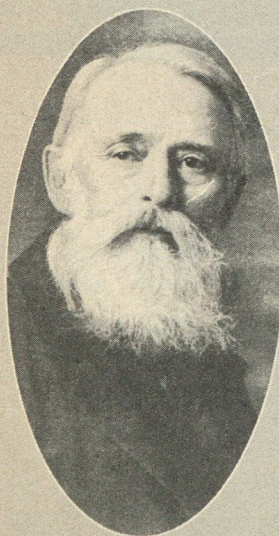
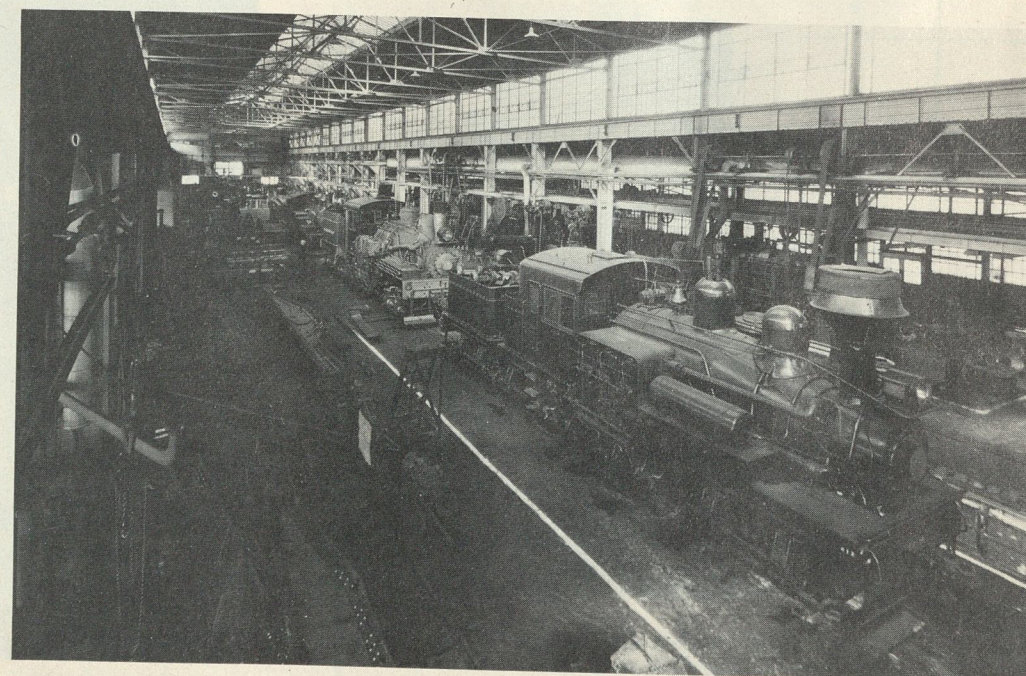


Fig. 132. Front Truck of Shay Geared Locomotive.

SHAYS had less than two years of quantity production remaining after this February 1924 photo. From front to rear: Cherokee Company 8; Webb Logging & Timber 9; Diamond & Caldor 10; and the boiler for Siler Logging 2. But Lima will not forget its heritage, for the colorful brochures with Daylight 4-8-4 covers will include a page depicting Ephraim Shay's geared engine that made Lima famous.



**THE MAN WHO
STARTED IT ALL**

I EPHRAIM SHAY was born in Sherman Township, Huron County, Ohio, on July 17, 1839. He attended school in New Jersey and later taught school while studying medicine. In 1861 he enlisted in the Union Army's Corps of Engineers, and Shay's diary, which he maintained during the war, contained this entry: "... On my 22nd birthday I start on my first expedition to defend my country's Honor and Flag." He saw action at Shiloh and at Vicksburg with Grant and was honorably discharged in 1864. After returning to Ohio he married Jane Henderson on July 26, 1864.

Shay took up his medical practice again but soon found that he could not make a proper living in this field. So he took his family to Michigan—first to Ionia County, then to Haring, a small village north of Cadillac. Lumbering was the chief industry on the upper Michigan peninsula in the early '70's, and Shay set up a small sawmill. It was here during an unusually mild winter that he started his locomotive-building project which eventually evolved into the Shay geared locomotive.

E. Shay was a rugged man with a strong but kindly look about him. In his later years he was often compared in looks to Walt Whitman. His interests ran from medicine to machinery, and he was capable of coping with almost any mechanical or engineering problem. His desire to see and understand mechanical things was surpassed only by his passion for reading. In his quest for knowledge he read anything he could lay his hands on.

In 1888 Shay moved again, this time to Harbor Springs, north of Boyne City and on the northwest tip of the Michigan peninsula. There he established the firm of E. Shay and Son and built a logging railroad called the Harbor Springs Railway Com-

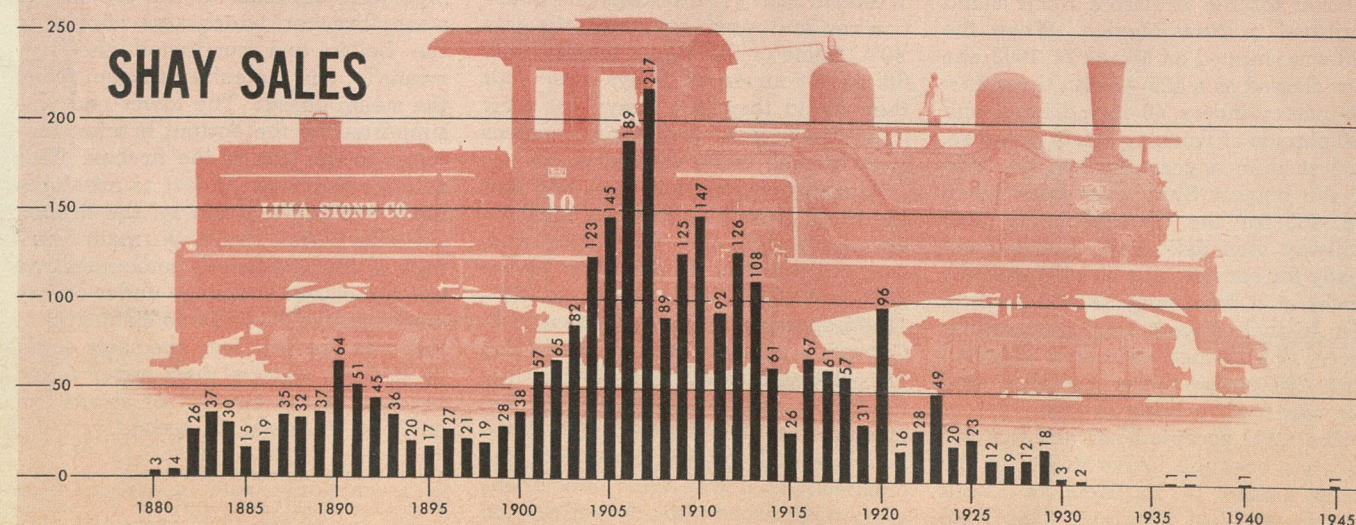
pany, known locally as the Hemlock Central. The locomotives for this line Shay built—or had built—to his new ideas on the design of the Shay geared engine. Unfortunately, all of these little engines were scrapped or sold after the old gentleman's death, and there are only a few photographs of them still around. E. Shay was also the founder of the local water company, which he built and later donated to the city.

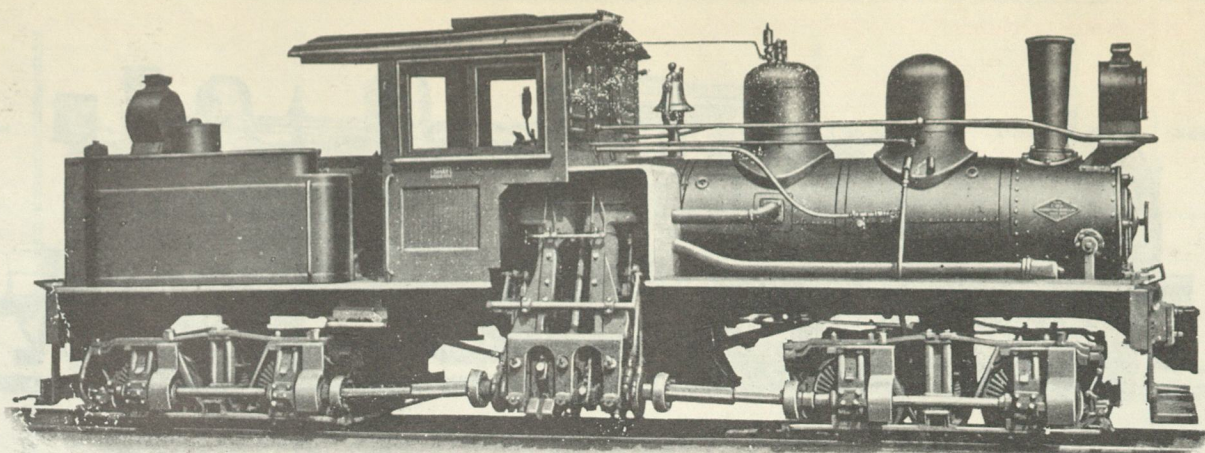
In the period from 1890 until his death in April 1916, Shay tried his hand at many things. One was an all-steel boat, the *Aha*, 40 feet long and with a beam of 6 feet. It was powered with miniature triple-expansion steam engines that could move her to 21 mph if need be. Another project was the building of an all-steel house. This was hexagonal in shape and appeared to be a brick structure on a stone foundation with a slate roof. It was actually fabricated of sheets of steel embossed with these patterns. The interior walls were likewise embossed sheets painted with beautiful designs in oils.

When automobiles came on the scene, Shay was the first in Harbor Springs to own one. As new models came out he would buy them more for mechanical investigation and experimentation than for any prestige they might give him.

Ephraim Shay departed this world in the 77th year of his life. His passing brought a great loss, for he was known by all as a gentleman who was energetic, charitable, efficient, and very kind. To the business community it was the loss of a man who was known as "a gentleman of strict integrity and unquestionable character." His mark on the logging industry, the Shay locomotive, reflected the traits of its inventor—strength, efficiency, and tirelessness. **I**

SHAY SALES

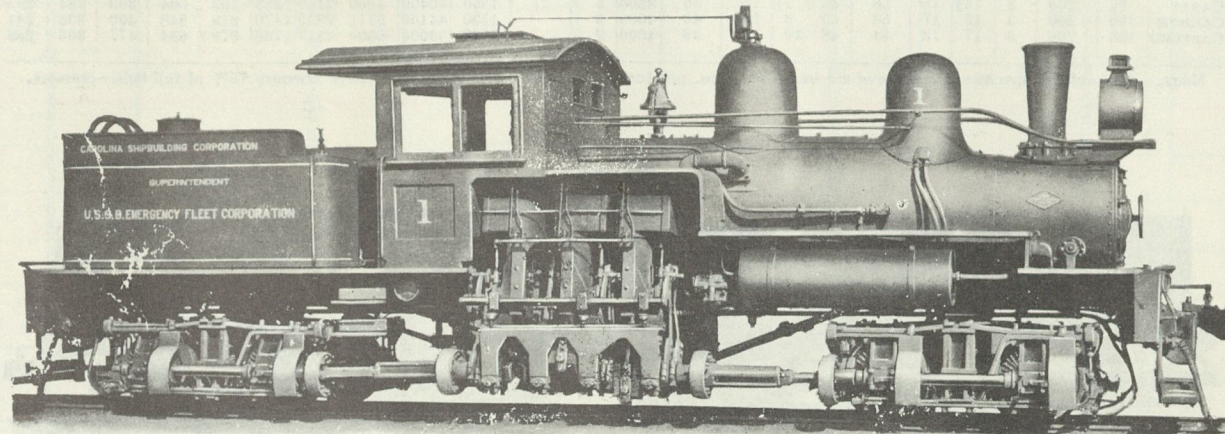




CLASS "A" SHAY LOCOMOTIVES

AGE CLASS	Weight in Working Order		Boiler Pressure	CYLINDERS			WHEEL BASE		DRIVERS		Capacity of Water Tank	Fuel Capacity, Coal	Fuel Capacity, Wood	Fuel Capacity, Oil	Tractive Power	HAULING CAPACITY IN TONS OF 2,000 LBS. (EXCLUSIVE OF ENGINE)							
	Tons	Lbs.		No.	Diam.	Stroke	Rigid	Total	No.	Diam.						ON GRADES—STRAIGHT TRACK							
																On Level	1%	1%	2%	3%	4%	5%	6%
13	18	160	12	6	10	48	18	10	8	22	400	1	125	125	6050	643	326	203	113	76	55	43	3
13	18	160	12	7	12	48	21	0	8	29	730	1	285	285	7480	914	395	246	135	88	64	48	3

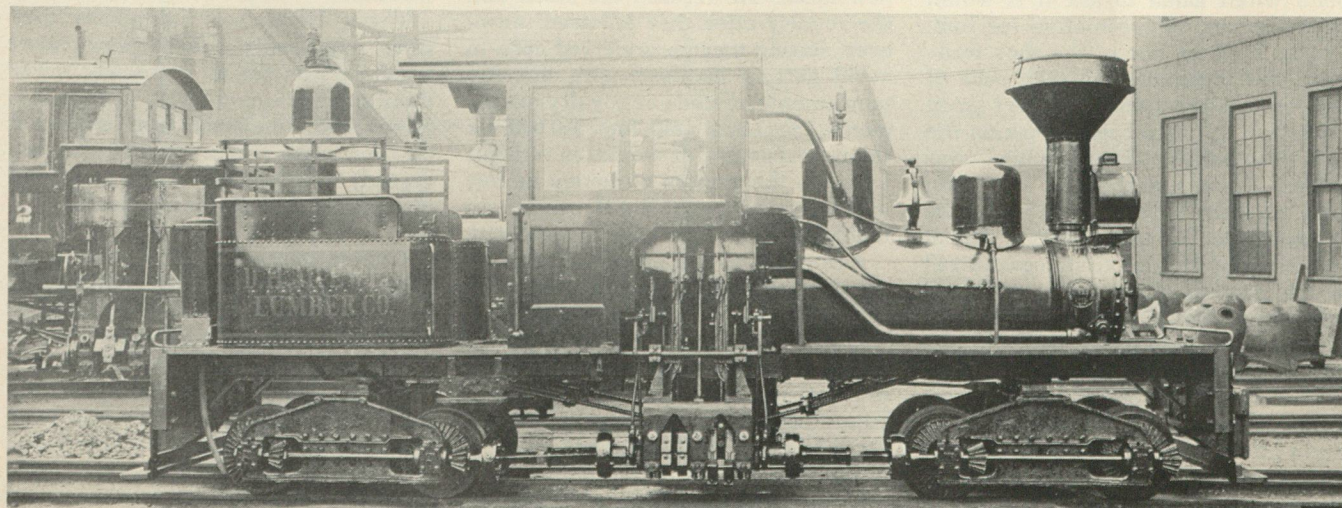
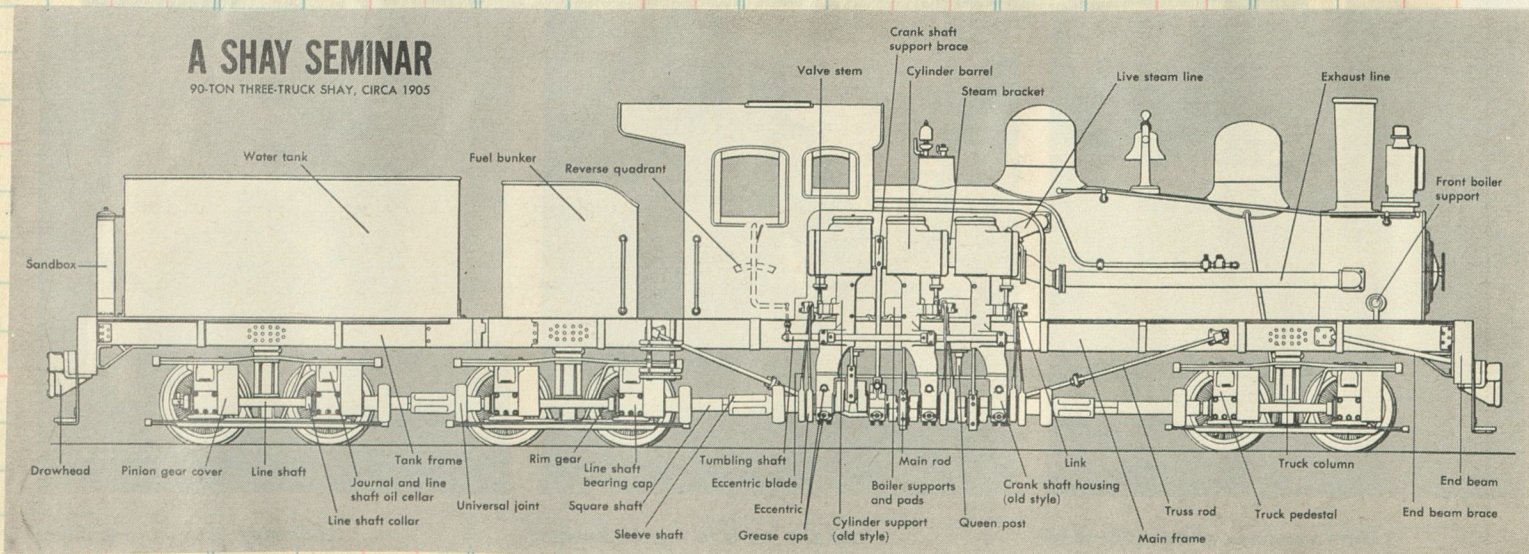
NOTE.—All hauling capacities given above are based on 8 lbs. per ton rolling friction, and mean effective pressure 75% of full boiler pressure.



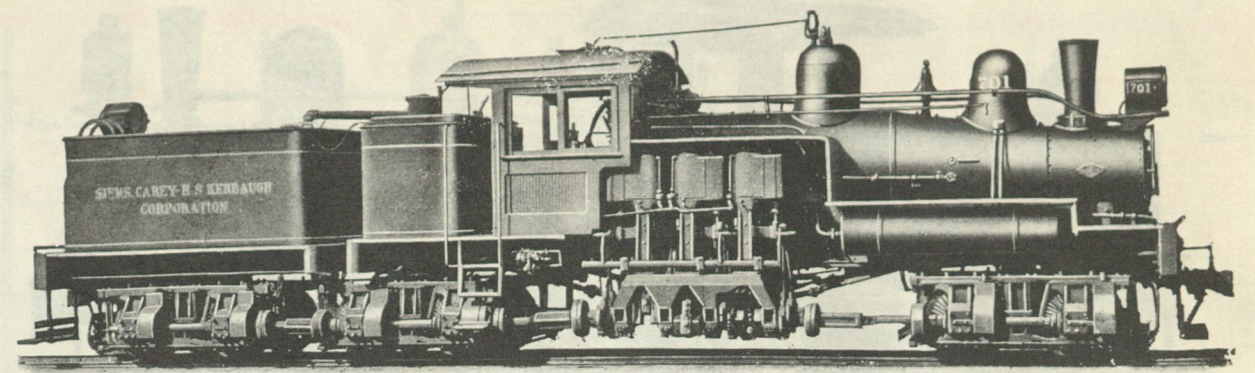
CLASS "B" SHAY LOCOMOTIVES

CODE WORD	Weight in Working Order	Boiler Pressure	CYLINDERS			WHEEL BASE		DRIVERS		Capacity of Water Tank	Fuel Capacity, Coal	Fuel Capacity, Wood	Fuel Capacity, Oil	Tractive Power	HAULING CAPACITY IN TONS OF 2,000 LBS. (EXCLUSIVE OF ENGINE)								
			No.	Diam.	Stroke	Rigid	Total	No.	Diam.						ON GRADES—STRAIGHT TRACK								
															On Level	1%	2%	3%	4%	5%	6%		
			Tons	Lbs.	In.	In.	Ft. In.	In.	In.	Gals.	Tons	Cords	Gals.	Lbs.									
RA	20	160	3	6	12	50	23	6	8	29	730	1 1/2	1	285	8600	1055	457	287	158	106	78	59	4
BAY	24	160	3	8	8	50	24	1	8	29	830	1 1/2	1	500	9750	1193	518	325	179	117	87	66	5
BALE	28	160	3	8	10	50	24	4	8	29	850	1 1/2	1	500	12200	1498	650	407	226	152	111	85	6
GALER	160	3	8	12	50	24	12	10	8	29	1200	1 1/2	1	1500	13500	1650	700	451	260	174	126	96	8
BALLAD	36	180	3	10	10	50	26	5	8	29	1200	1 1/2	1	800	14320	1756	760	476	262	174	126	96	8
BALLOON	42	180	3	10	12	50	27	2	8	29	1560	2	1 1/2	800	16900	2070	898	562	310	206	150	114	9
BALUSTER	11	200	3	12	12	56	28	10	8	32	1750	2	1 1/2	950	22540	2775	1205	767	421	282	206	159	12
BALUSTRA	63	200	3	12	12	56	33	6	8	36	2000	2	2	1200	23840	2928	1367	793	438	291	211	161	12
BALUSTRUT	70	200	3	13	15	60	34	10	8	40	3000	5	2 1/2	1500	32840	3985	1730	1083	602	402	294	225	15

NOTE.—All hauling capacities given above are based on 8 lbs. per ton rolling friction, and mean effective pressure 75% of full boiler pressure.



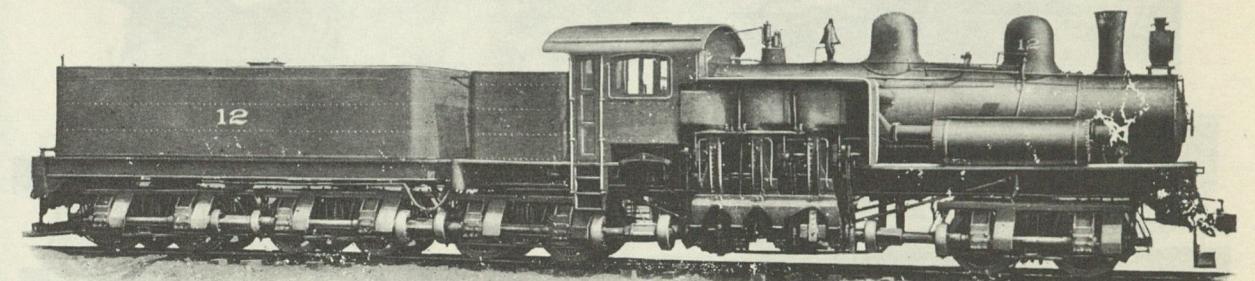
ONE-SPOT of D. H. McEwen Lumber Company—a 1906 graduate of Lima—was first Shay to sport new cylinder design and cast-steel truck frames. Ephraim's idea was being refined.



CLASS "C" SHAY LOCOMOTIVES

CODE WORD	Weight in Working Order	Boiler Pressure	CYLINDERS			WHEEL BASE		DRIVERS		Capacity of Water Tank	Fuel Capacity, Coal	Fuel Capacity, Wood	Fuel Capacity, Oil	Tractive Power	HAULING CAPACITY IN TONS OF 2,000 Lbs. (EXCLUSIVE OF ENGINE)												
			No.	Diam.	Stroke	Rigid	Total	No.	Diam.						ON GRADES—STRAIGHT TRAC.												
															On Level	1%	2%	3%	4%	5%							
			Tons	Lbs.	In.	In.	Ft. In.	In.	In.	Gals.	Tons	Cords	Gals.	Lbs.													
CA	60	200	3	11	12	52	35	6	12	32	2000	34	3165	1372	862	479	320	234	176	141							
CARE	70	200	3	12	15	52	40	2	12	36	3000	34	1200	30350	33723	1616	1014	562	376	275	211						
CARB	80	200	3	13	15	56	44	6	12	36	3000	34	1200	35100	4305	1868	1169	648	434	317	242						
CARBON	90	200	3	14	15	56	43	3	12	36	3500	34	1500	40400	4860	2156	1393	834	569	389	280						
CARBON CAPTURE	100	200	3	15	17	58	45	6	12	40	4000	6	1500	44100	5411	2349	1470	819	548	400	284						
	125	200	3	17	18	64	46	10	12	46	4000	9	2000	53000	6500	2817	1768	979	654	477	366						

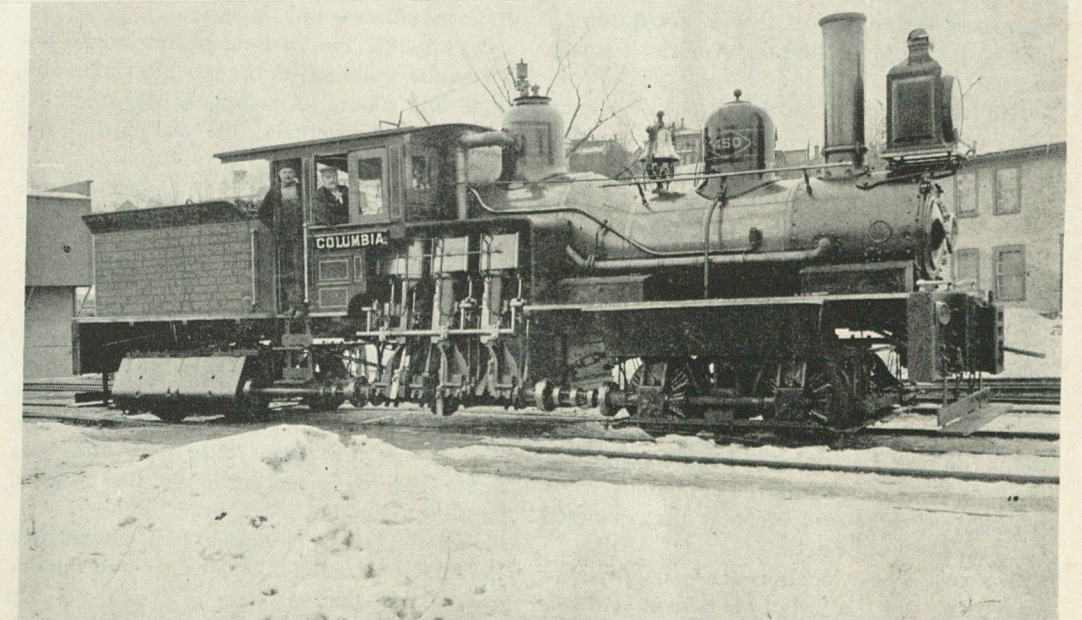
NOTE.—All hauling capacities given above are based on 8 lbs. per ton rolling friction, and mean effective pressure 75% of full boiler pressure.



CLASS "D" SHAY LOCOMOTIVES

CODE WORD	Weight in Working Order	Boiler Pressure	CYLINDERS			WHEEL BASE			DRIVERS		Capacity of Water Tank	Fuel Capacity, Coal	Fuel Capacity, Oil	Tractive Power	HAULING CAPACITY IN TONS OF 2,000 LBS. (EXCLUSIVE OF ENGINE)							
			No.	Diam.	Stroke	Rigid	Total	No.	Diam.	ON GRADES—STRAIGHT TRACK												
										On Level					1%	2%	3%	4%	5%	6%		
DAN	Tons 150	Lbs. 200	3	In. 17	In. 18	In. 64	Ft. 58	In. 4	16	In. 46	Gals. 8000	Tons 9	Gals. 2000	Lbs. 53000	6475	2792	1743	954	626	452	341	264

NOTE.—All hauling capacities given above are based on 8 lbs. per ton rolling friction, and mean effective pressure 75% of full boiler pressure.



Courtesy Edwin K. Heath, Barre, Vt.

From the Chicago World's Fair of 1893 to the B&C Railroad.

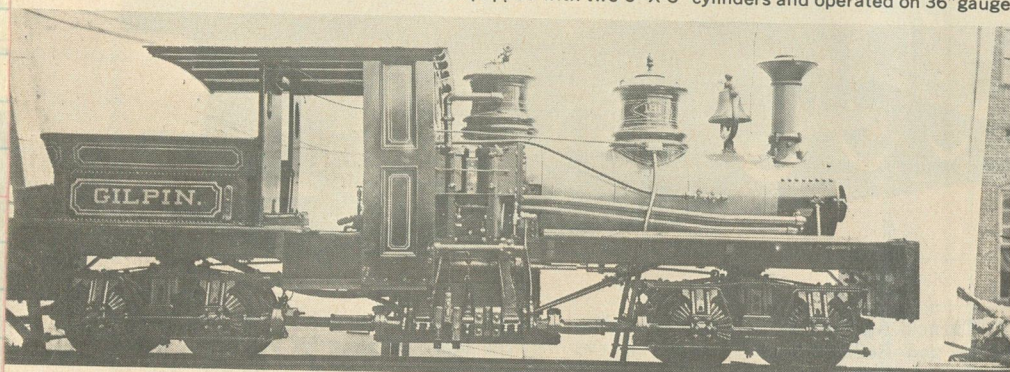
The Lima Locomotive Works, Lima, O., sent its 450th completed unit to the Chicago World's Fair in 1893. This was a Shay geared locomotive numbered 450, and was used by the B&C for a while, but proved too slow. This photo was taken in Barre. Printed on the side of the tender is the following:

SHAY PATENT LOCOMOTIVE ENGINE
manufactured by the
LIMA LOCOMOTIVE & MACHINE CO., LIMA, OHIO, U. S. A.
BOILER 44 in. WAGONTOP 11 in. TUBES, 106, 96 in. LONG, 2 in. Diam.
FIRE BOX, 73 inches LONG, 40 inches WIDE & 52 inches DEEP.
3 CYLINDERS 11 INCHES BORE & 12 INCHES STROKE.
8 DRIVERS, 32 INCHES DIAMETER. CAPACITY OF TANK 1800 GALLONS.
4 INCH SYPHON. 8 INCH PATENT STEAM BRAKE. GEARED 19 to 42.
GAUGE, 56½ inches. RIGID WHEEL BASE, 52 inches.
TOTAL WHEEL BASE 27 ft. 4 in.
LENGTH OVER ALL, 39 ft. WEIGHT IN WORKING ORDER, 80,000 lbs.
MANUFACTURERS OF ALL KINDS & TYPES OF AMERICAN LOCOMOTIVES.
FREIGHT CARS, CABOOS, CAR WHEELS & RAILWAY CASTINGS.
LOGGING, MINING & ALL KINDS OF SPECIAL CARS.

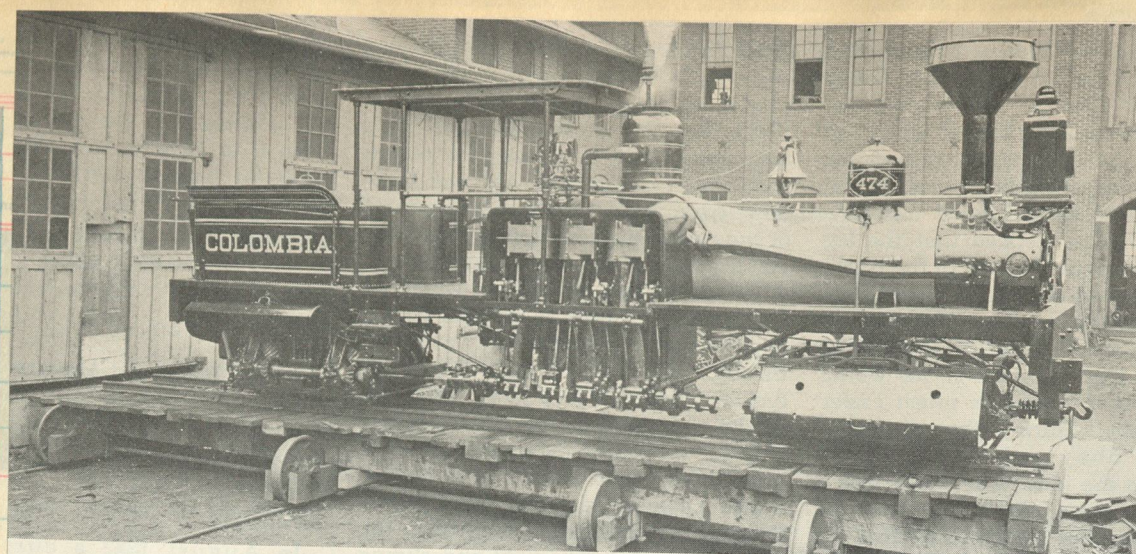
SELLER
DATE
FORM
DESTINATION



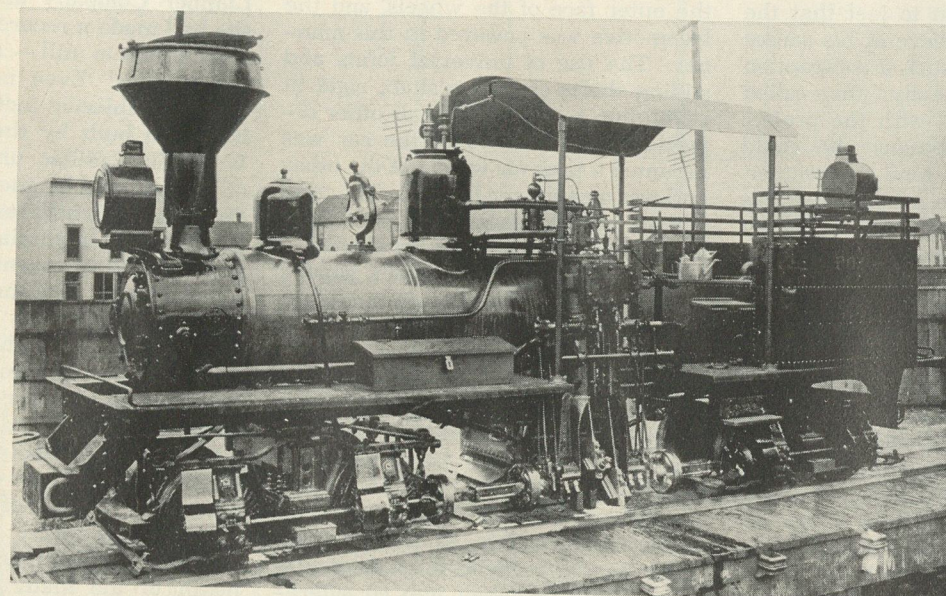
Cobbs and Mitchell Lumber Company of Cadillac, Mich., ordered this primitive Shay geared engine from Lima (Carnes, Agarter & Co.). It was the second Shay built by Lima, shop no. 8, built in September 1880. The locomotive was equipped with two 6" X 6" cylinders and operated on 36" gauge.



By 1887, the Lima Shay's were beginning to take on the more familiar appearance which marked later versions. Shop no. 181 (often used as engine nos. in those days) went to 24" gauge Gilpin Tramway.



SAFETY VALVE lifts on an early export—the Colombia. The two-trucker sported airy cab and full gear covers; adopted shop serial as her road number; was outshopped by Lima in 1894.



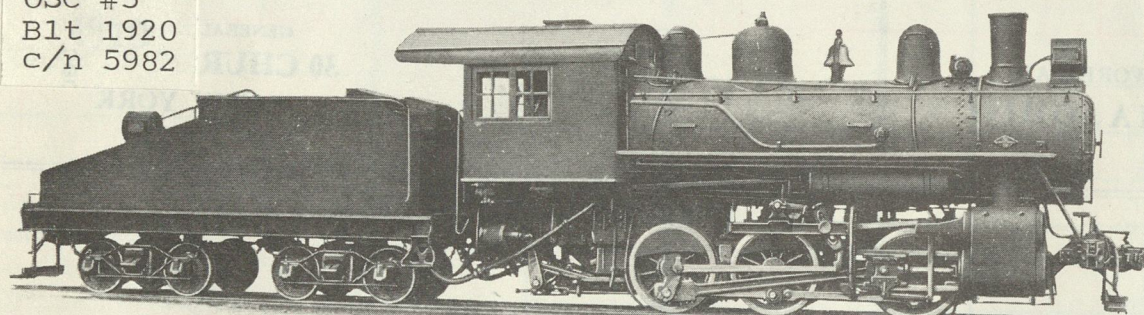
VARIATION on a theme: left-handed Shay No. 4 left the Lima works on June 15, 1903, for San Luis Potosi, Mexico. Her cab was simply a tin roof to keep out the tropical rains and sun.

1921

24

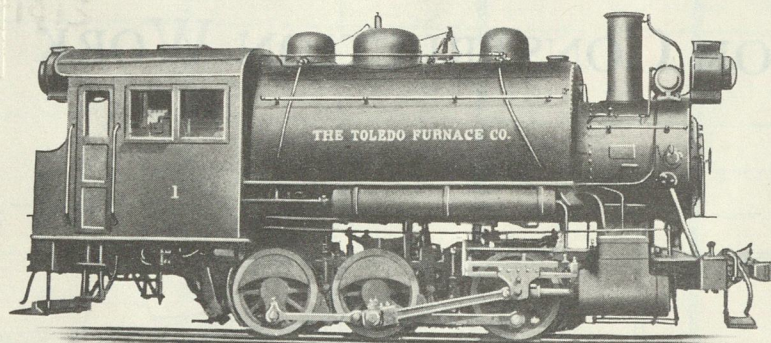
LIMA ROD LOCOMOTIVES

OSC #5
Blt 1920
c/n 5982



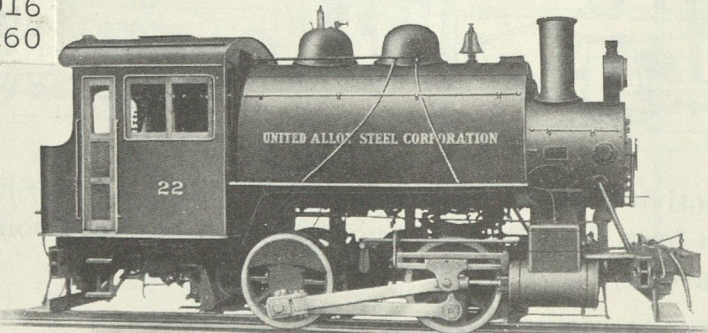
19" x 26" DIRECT CONNECTED LOCOMOTIVE BUILT FOR OTIS STEEL CO.

Blt 1915
c/n 5055



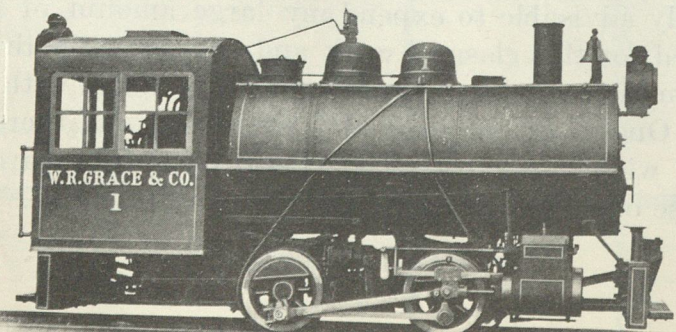
17" x 24" DIRECT CONNECTED LOCOMOTIVE BUILT FOR THE TOLEDO FURNACE CO.

Blt 1916
c/n 5160



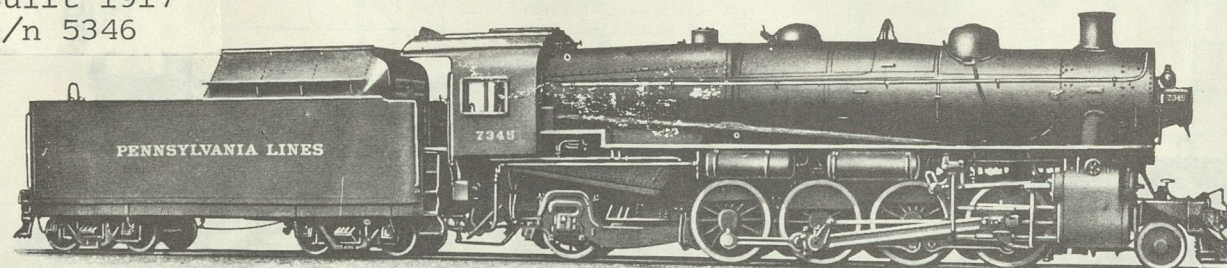
17" x 24" DIRECT CONNECTED LOCOMOTIVE BUILT FOR UNITED ALLOY STEEL CORPORATION

Blt 1921
c/n 6238

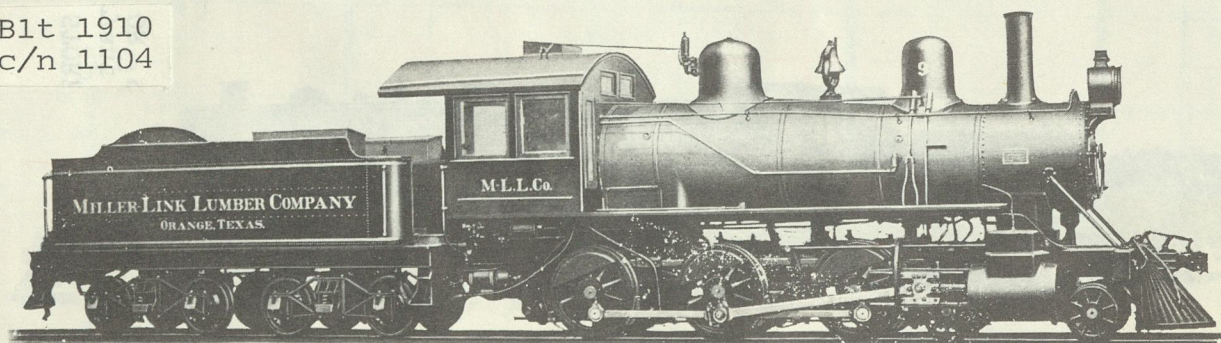


10" x 16" DIRECT CONNECTED LOCOMOTIVE BUILT FOR W. R. GRACE & COMPANY

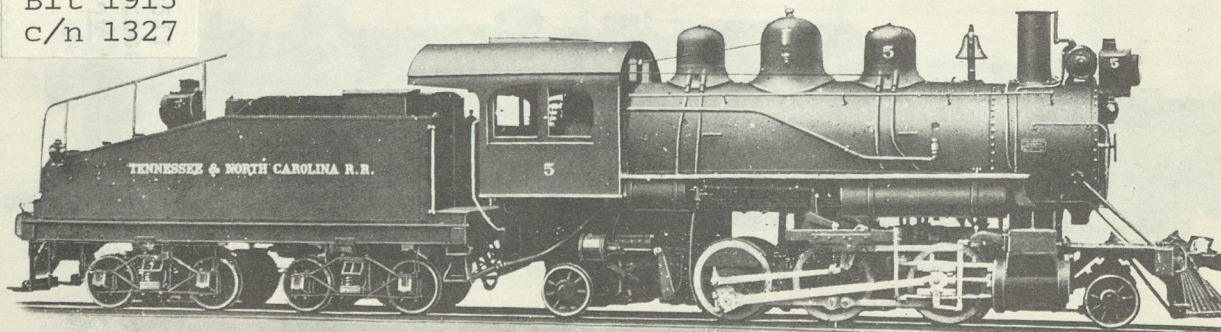
PFTW&C 7345
Built 1917
c/n 5346



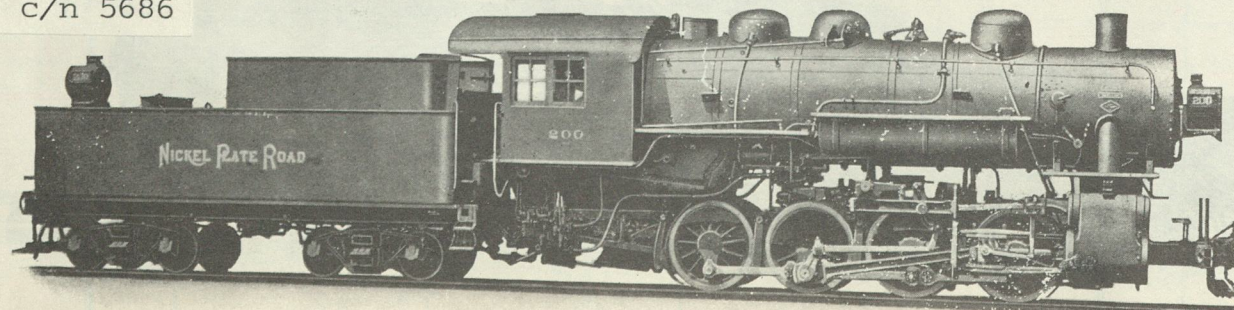
Blt 1910
c/n 1104



Blt 1913
c/n 1327



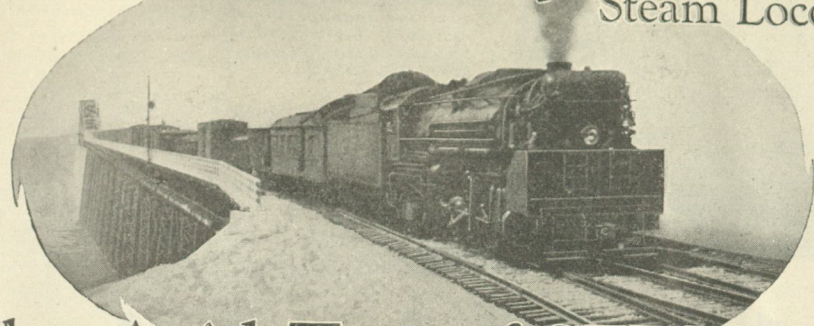
Blt 1918
c/n 5686



We are equipped to build locomotives of any type and size for either main line or industrial service.

Clos. No. Sold Amount

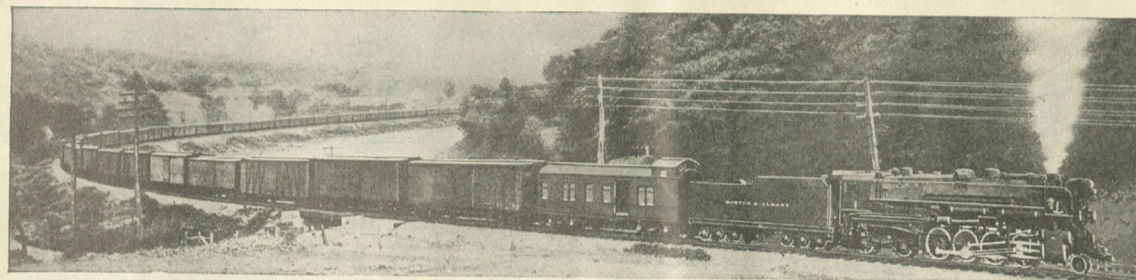
LIMA 2-8-4

Two-Cylinder
Super-Power
Steam Locomotive

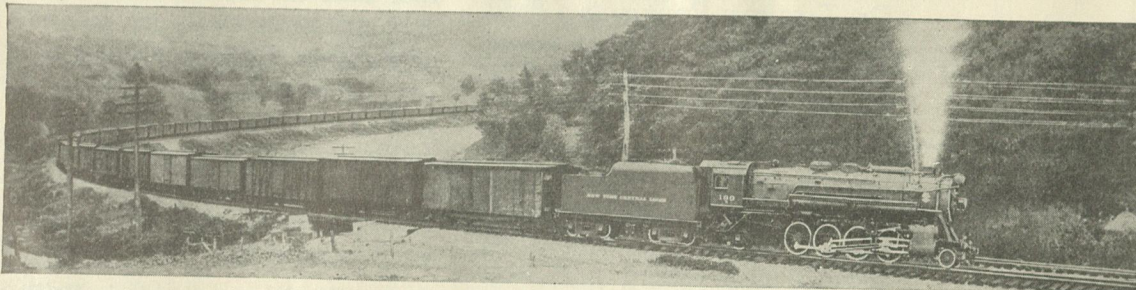
The Acid Test of SERVICE

Test Runs of April 14th, 1925

The Lima 2-8-4 Locomotive
shows what HIGH HORSE POWER OUTPUT accomplishes
in SPEEDING UP TRAIN OPERATION



54 Cars 2,296 Tons Gross Ton-miles per hour—46,219
Time—Selkirk to North Adams Junction—2 Hours, 18 Minutes

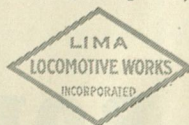


46 Cars 1,691 Tons Gross Ton-miles per hour—24,090
Time—Selkirk to North Adams Junction—3 Hours, 15 Minutes

"On this day, Mikado engine No. 190 started from Selkirk with a manifest train of 46 cars, 1,691 tons, 47 minutes ahead of the 2-8-4 type class A-1 which had 54 cars, 2,296 tons. Both trains ran without delays, the A-1 overtaking the No. 190 At Chatam, No. 190 took the outside track so that at the time of passing, the two trains were running side by side on parallel tracks under exactly the same conditions.

"The run may be taken as a fair comparison of the relative ability of the two engines to move freight over the line."

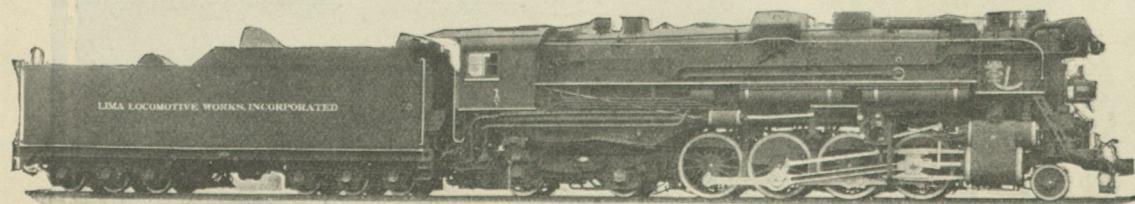
Mr. F. A. Butler
Superintendent Motive Power and Rolling Stock
Boston & Albany Railroad
Railway Age, Sept. 12, 1925.



With this on the books, Lima's engineering genius, William (Will) E. Woodard, came up with a new type of locomotive—the 2-8-4. The day she rolled out the door for her tests, this new lokie—called the A-1 by Lima—was a marvel. She was a direct descendant of MC's 8000, but had over 51 per cent more grate area, 240 pounds of working steam, and 29 x 32-inch cylinders, and would outsteam any other locomotive of her size. Over the years almost every major railroad in the country included these great power plants in their rosters. At the top of the list were such lines as the Boston & Albany, Erie, Nickel Plate, Chesapeake & Ohio, and Pere Marquette. The class acquired its name, Berkshire, from its whopping success on the Boston & Albany's line through the Berkshire Hills.

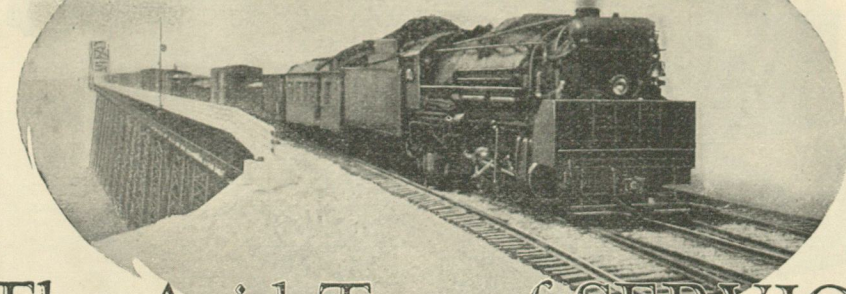
Lima Super-Power
on the

Illinois Central



Dynamometer Car results of eight round trips Centralia to Mounds with each engine

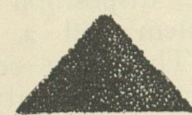
LIMA 2-8-4

Super-Power
Steam Locomotive

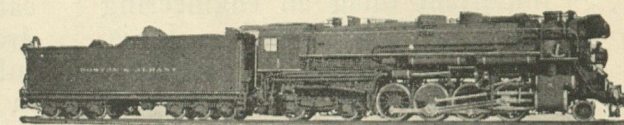
The Acid Test of SERVICE

FOUR YEARS' PROGRESS in COAL SAVING

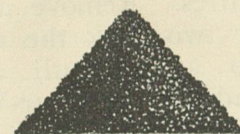
A Comparison of COAL per DRAW BAR HORSE POWER
as shown by ROAD SERVICE TESTS



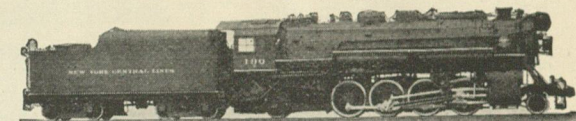
3.56 Pounds



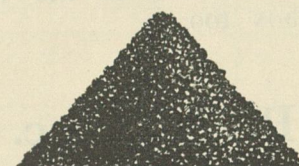
Engine A-1 (built 1925)



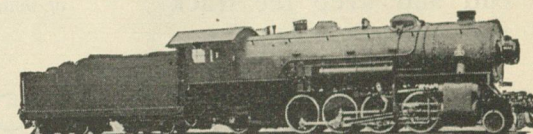
4.44 Pounds



Engine 8,000 (built 1922)



5.66 Pounds



Representative Mikado (1921)

Pounds of Dry Coal
per DRAW BAR HORSE POWER Hour
(this includes coal
for all auxiliaries)



Mr. F. A. BUTLER
Superintendent Motive Power & Rolling Stock
BOSTON & ALBANY RAILROAD
says:
(in reference to the A-1 tests)

"The tests were run under normal operating conditions and the results, therefore, reflect the performance of the locomotive in regular service."

COMPARING

Lima 2-8-4
28" x 30" cylinders
Driver Weight 248,200 lbs.
240 lbs. Boiler Pressure
60% limited cut-off

With

I. C. 2-10-2
30" x 32" Cylinders
Driver Weight 296,500 lbs.
190 lbs. Boiler Pressure
Full Stroke Cut-off

(The I. C. 2-10-2 type represents the best design of motive power units available at the time of their building in 1922)

Average Tons Lima 2-8-4—5,231
Average Speed Lima 2-8-4—18.8 M.P.H.,

I. C. 2-10-2—4,952
I. C. 2-10-2—15.75 M.P.H.

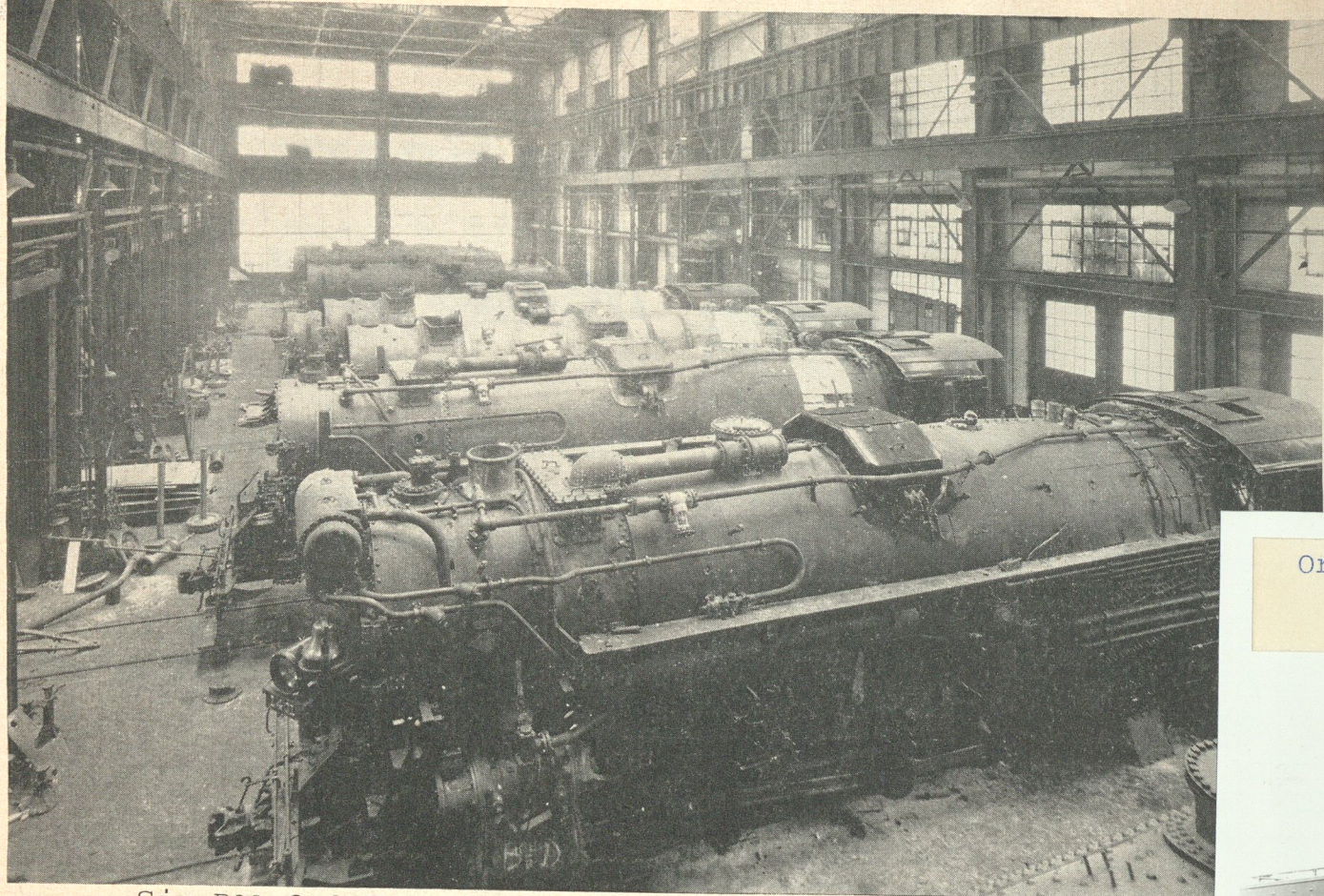
Although the I. C. 2-10-2 had 48,300 lbs. more weight on drivers than the Lima 2-8-4 and five pairs of drivers instead of four pairs the Lima 2-8-4 produced the above increased tonnage and speed.

The Booster provided the tractive power needed to start heavy trains.

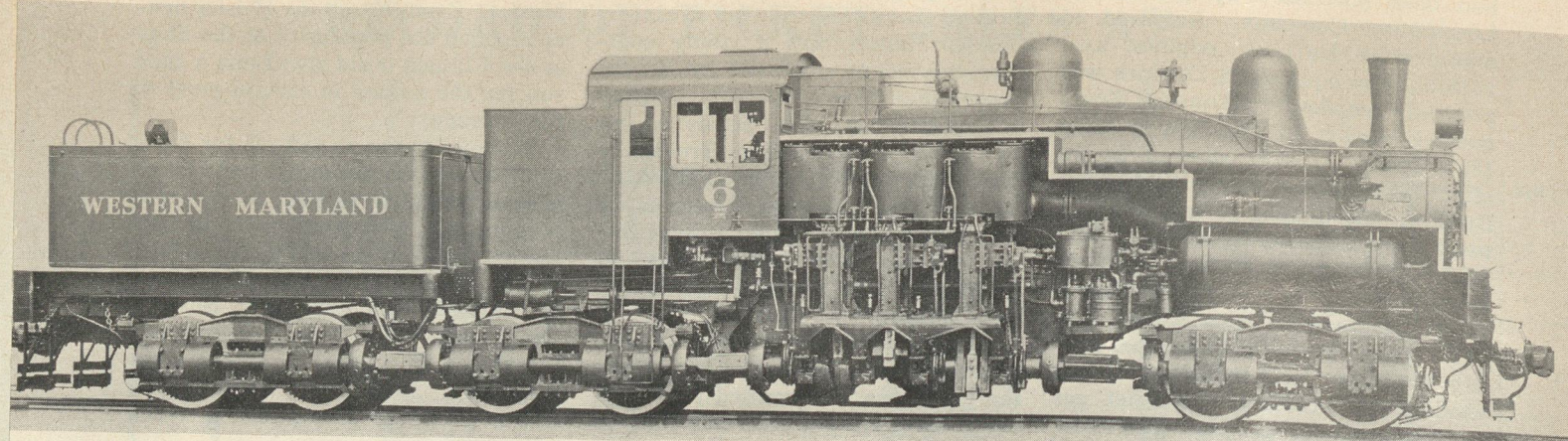
The Limited Cut-Off high pressure cylinders backed by ample boiler provided the power to pull the train at high speed.

These improvements raise an eight coupled engine into the class of a ten coupled.





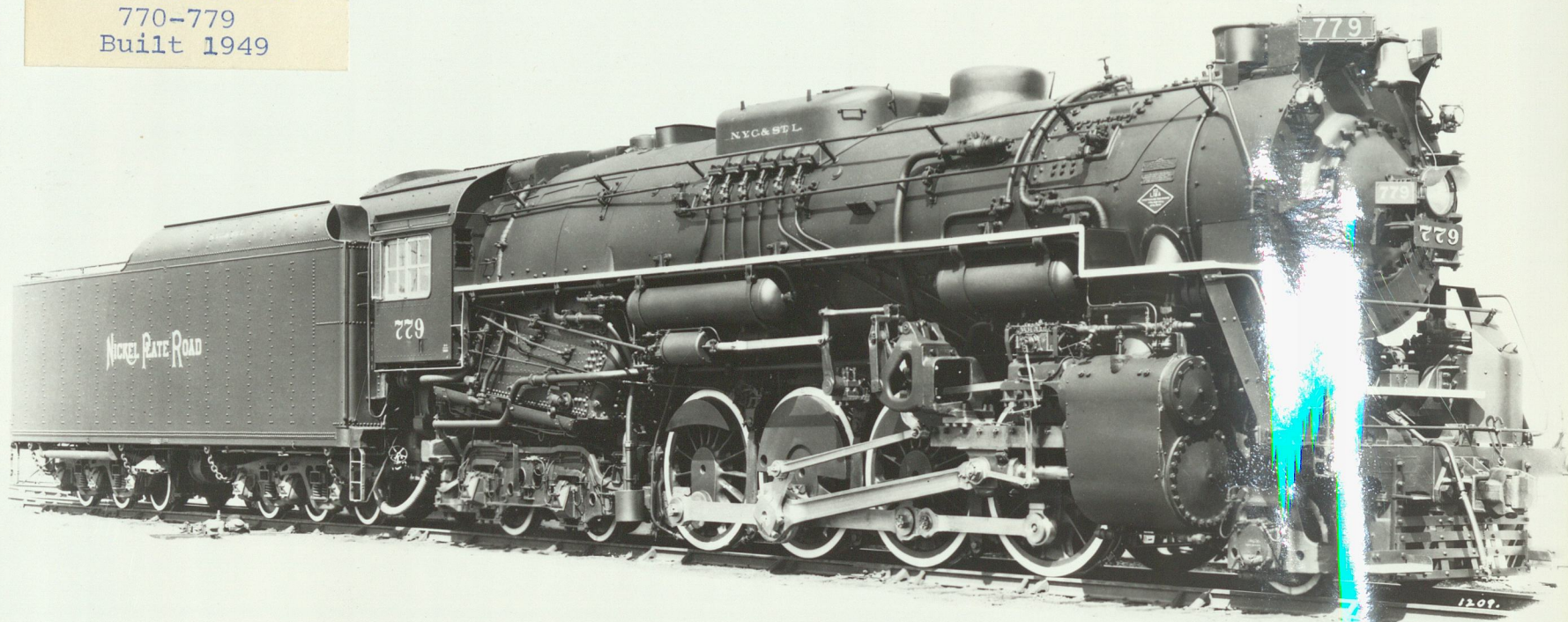
Six B&A 2-8-4's on the production line in 1926



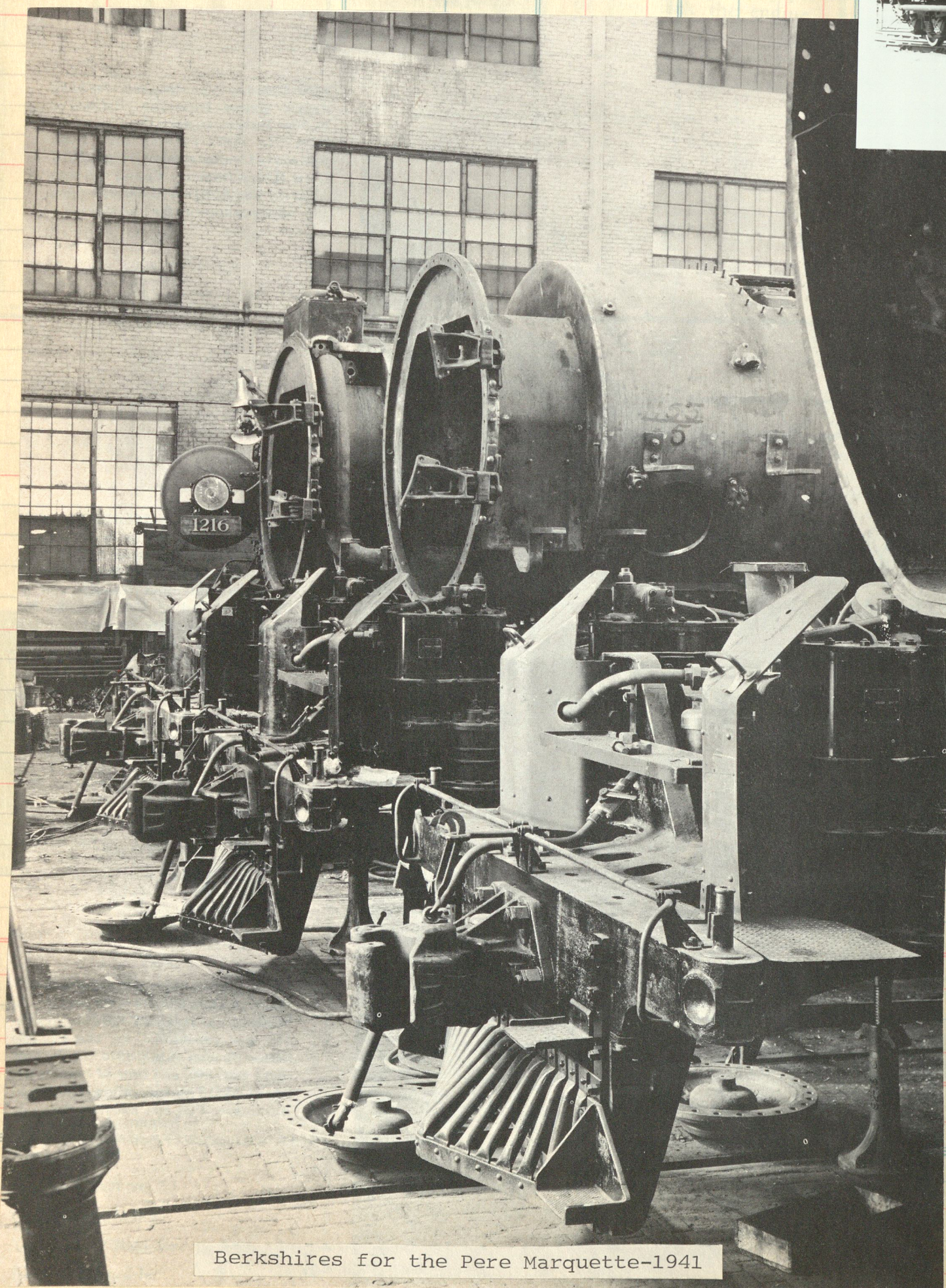
NEWEST, largest Shay ever built—the monstrous Six-Spot of the Western Maryland—wound up in Baltimore & Ohio's museum in Baltimore. She weighed a whopping 324,000 pounds on drivers.

TRAINS collection.

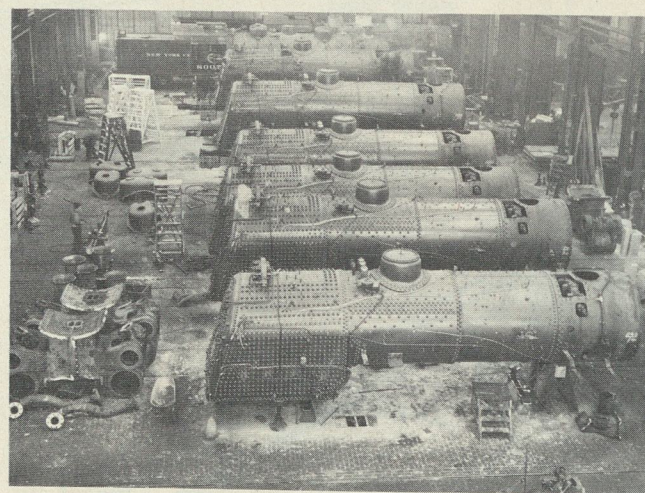
Order No. 1209
770-779
Built 1949



Construction number 9380 - the last engine to be built at "Loco"



Berkshires for the Pere Marquette-1941



FIRST large post-depression Lima order occupies south bay of erecting shop: New York Central U-3k 0-8-0's 8000-8049. The contract was half of 1937's production—the only year between 1930 and 1940 that the builder made money. Other orders that year: Boston & Maine 4-6-2's, Kansas City Southern 2-10-4's, Pere Marquette 2-8-4's, and Southern Pacific streamlined 4-8-4's.

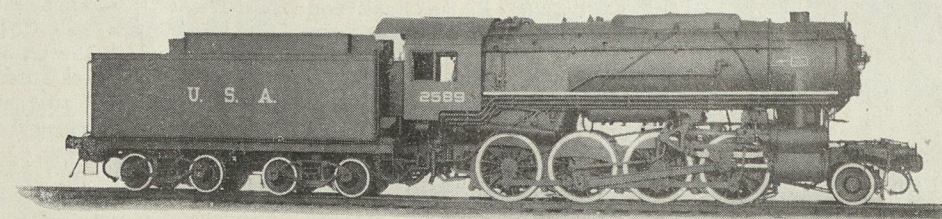


Courtesy of The Lima Locomotive Works

Building Locomotives in a Modern Plant

The manufacture of locomotives and railway cars is one of our most important industries. During the last twenty years the locomotives built have steadily increased in size, power, and weight. This is due to the demand for faster and heavier trains in the passenger service; also for heavier trains in the freight service in order to reduce the cost of hauling. Many of the passenger locomotives now built weigh 140 tons, while freight locomotives weighing over 200 tons are not uncommon.

These 'Iron Doughboys' Fight on Many Fronts



Shown above is a builder's view of one of a large number of locomotives built for the United States War Department not only by Lima, but also by other locomotive builders. A Lima-built locomotive of this type arrived at Oran, North Africa, late last spring and was immediately set up by the Military Shop Battalion at this base. Since then it has hauled everything there is to

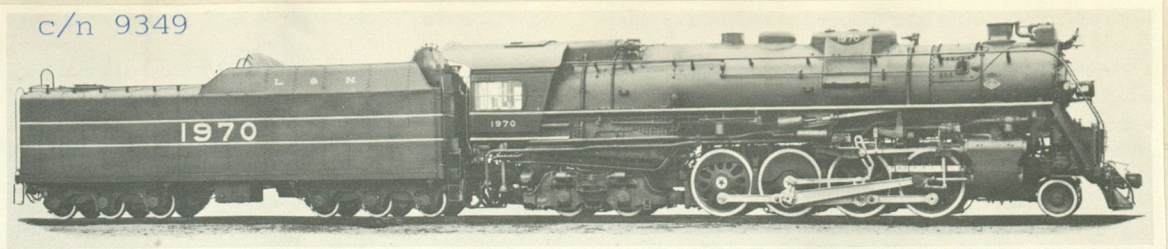
haul over there—ammunition, rations, wounded, trucks, tanks, and the soldiers of five armies: British Tommies and Gurkhas from India, French Foreign Legionnaires and Senegalese from Equatorial Africa, Americans, Germans and Italians. The last-named two nationalities were carried in ignominy. They were prisoners.



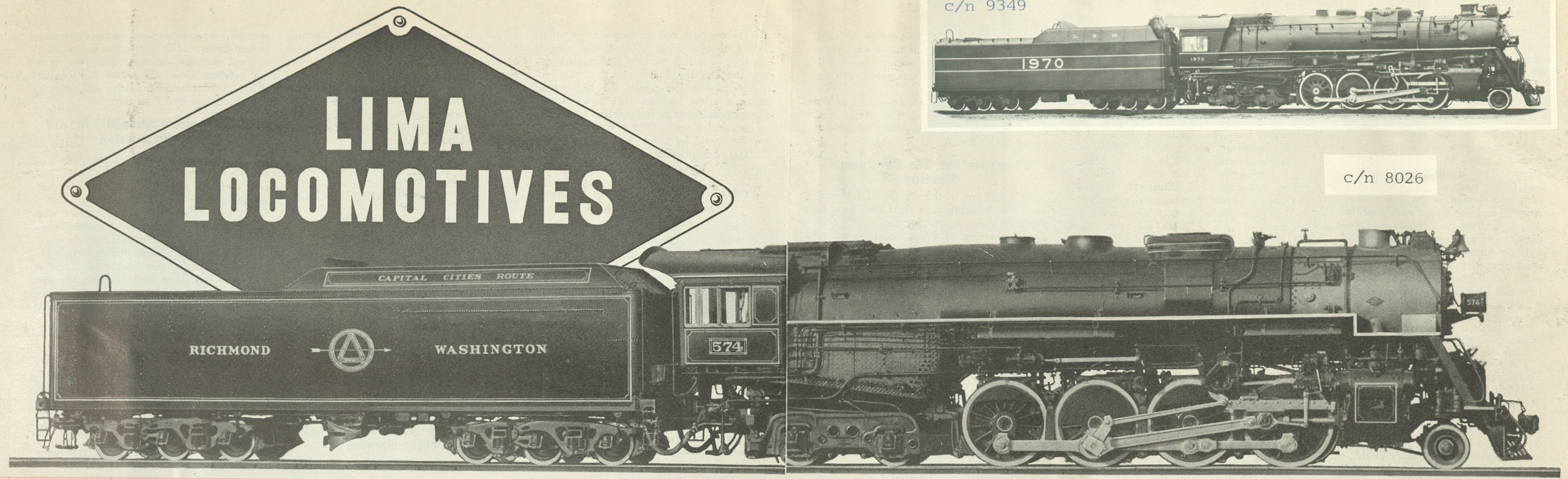
Jan 1944

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, O.

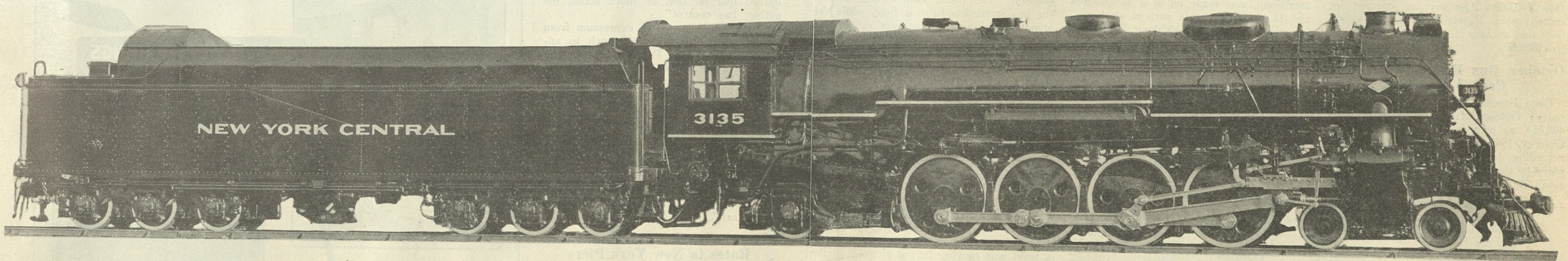
109
Amount



c/n 8026



25 MORE LIMAS speed war traffic



c/n 8302

on the

NEW YORK CENTRAL



LOCOMOTIVE CHARACTERISTICS

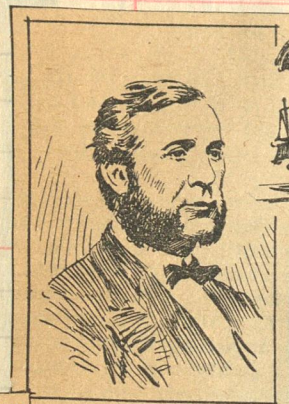
Weight on Drivers.....	266,500 Lbs.
Weight of Engine.....	401,100 Lbs.
Cylinders (2).....	26 x 30 Ins.
Diameter of Drivers.....	72 Ins.
Boiler Pressure.....	250 Lbs.
Tender Capacity (fuel).....	42 Tons
Tender Capacity (water).....	15,200 U. S. Gals.

Just in time to play their part in helping to speed the heaviest traffic this great system has ever handled, these 25 new Lima-built super-power steam locomotives have now gone into service. They join the 25 Class L-4a Limas delivered to this road in 1943, and the 15 Class L-3b Limas delivered in 1940. Their speed and high tractive power fit them particularly for general service under today's operating conditions.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

Railway Mail Service

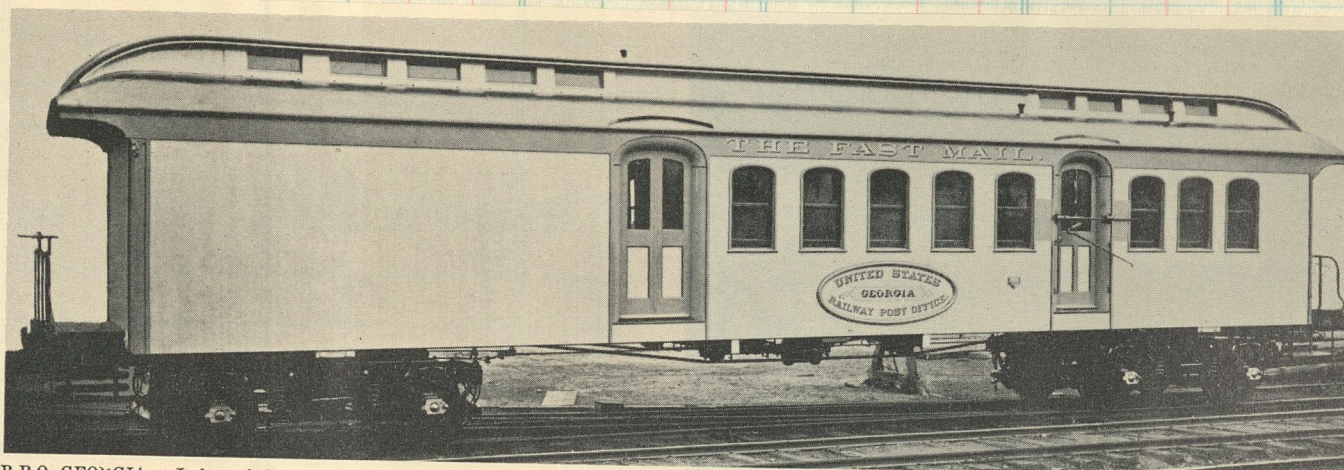
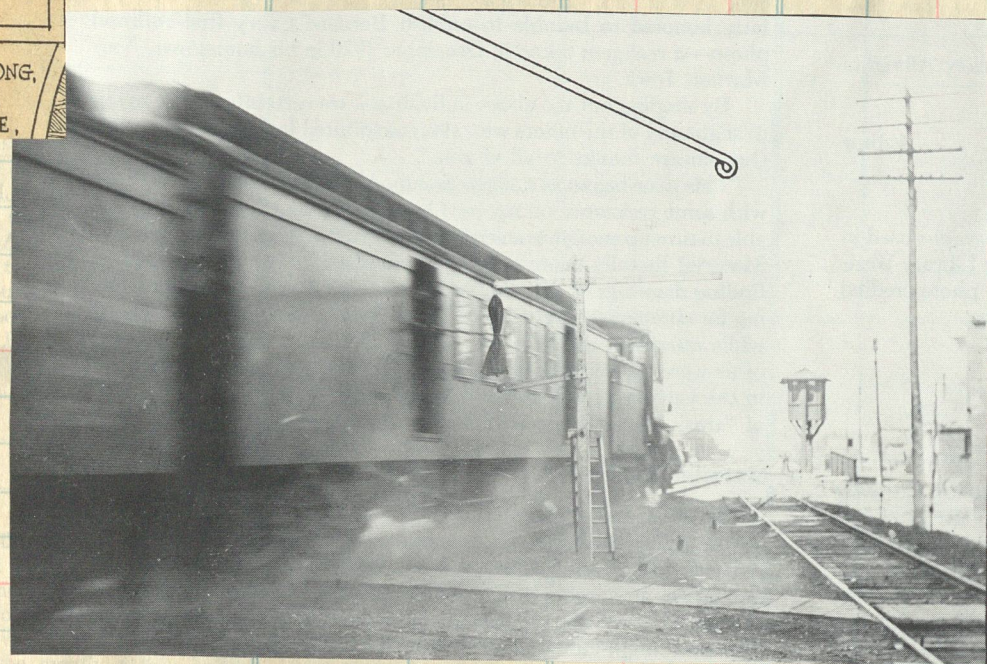
Clos. No.



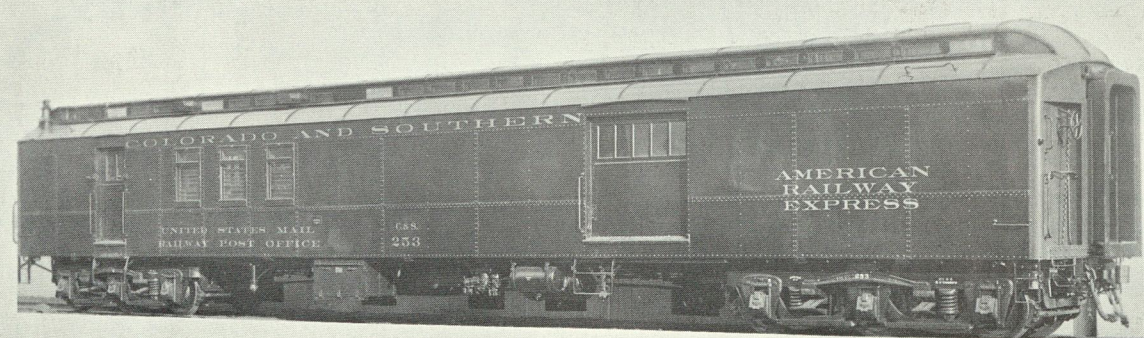
GEORGE B. ARMSTRONG,
FOUNDER OF U.S.
RAILWAY MAIL SERVICE.



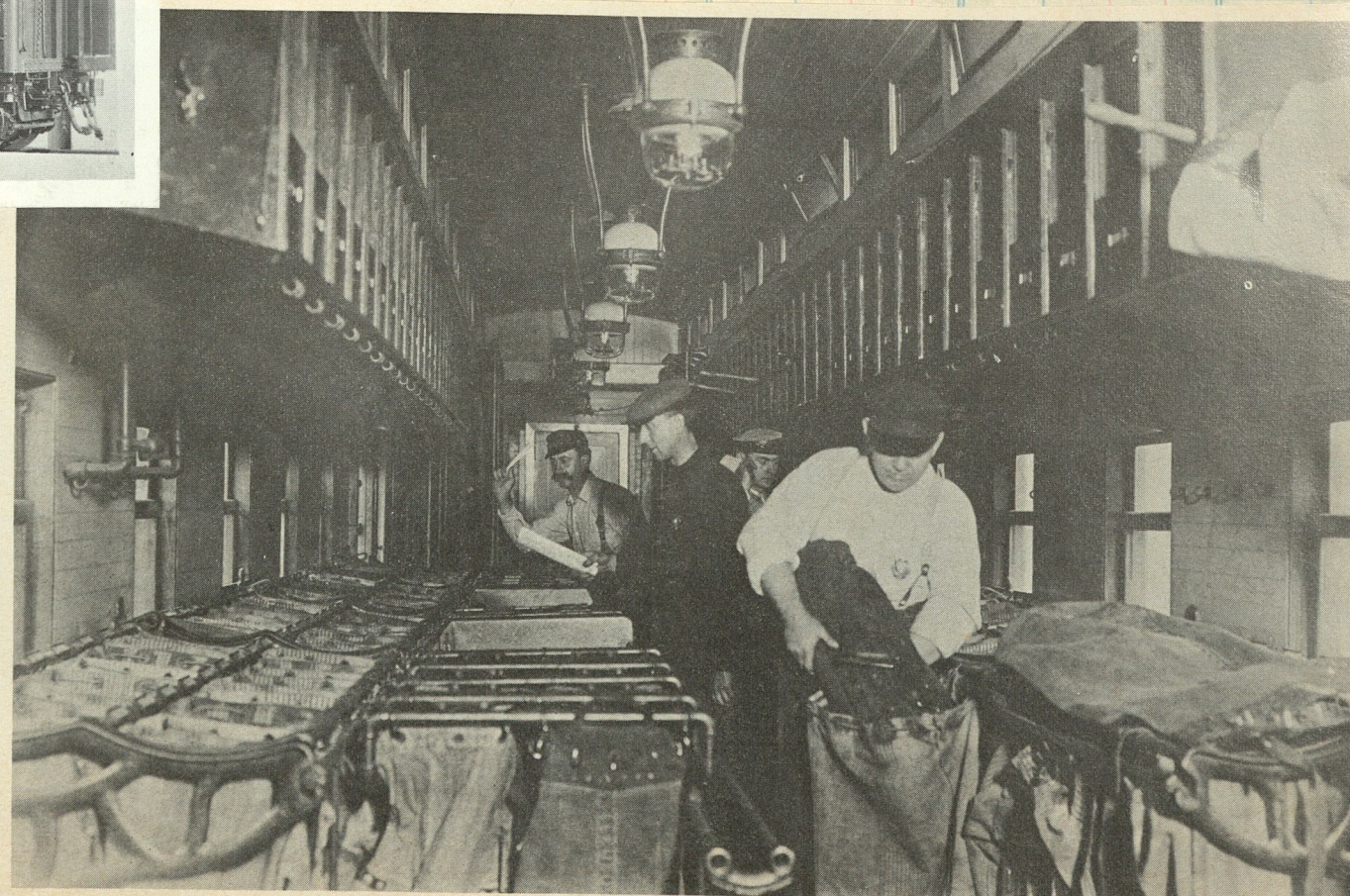
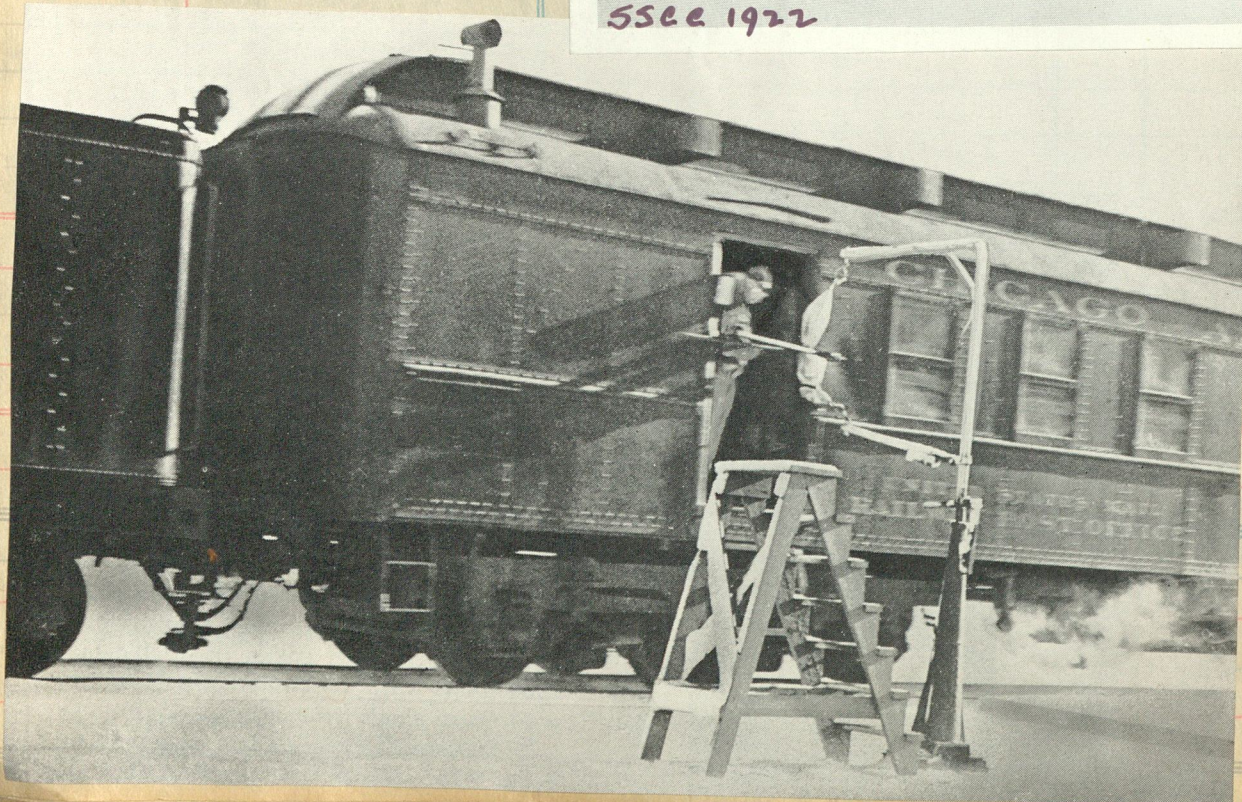
MALONE & UTICA RPO
New York Central
Adirondack Div Trn #2
July 3, 1944.



R.P.O. GEORGIA, a Jackson & Sharp car operated in New York-New Orleans service in the 1880's. Everett L. DeGolyer Jr. collection.

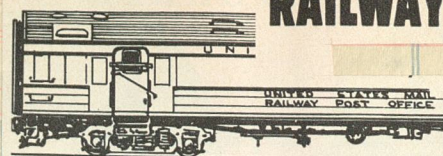


5522 1922



ONCE ESTABLISHED, the basic layout of the RPO changed little — witness this interior of a Burlington car in wood-and-oil-lamp days.

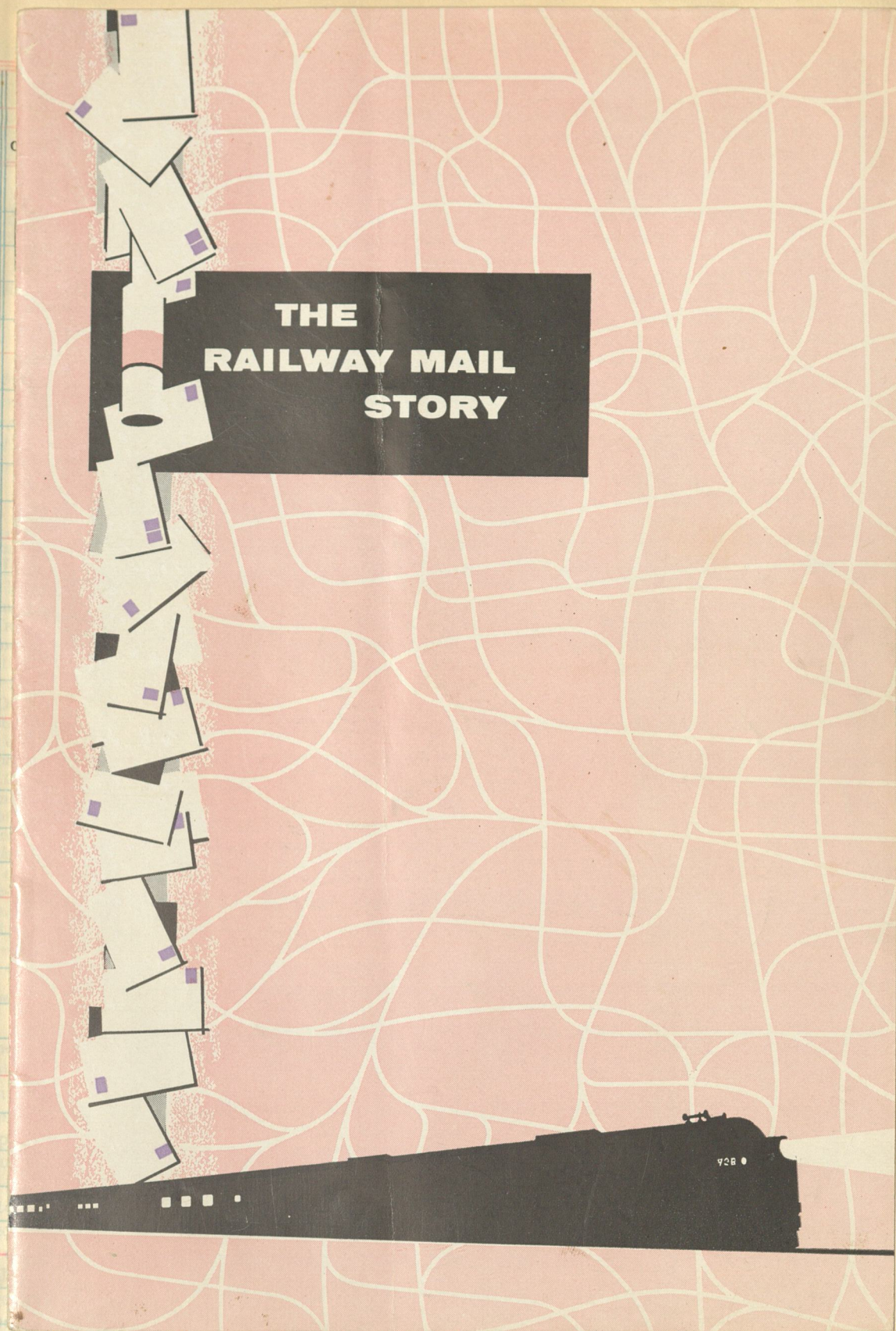
RAILWAY POST OFFICE CARS AT



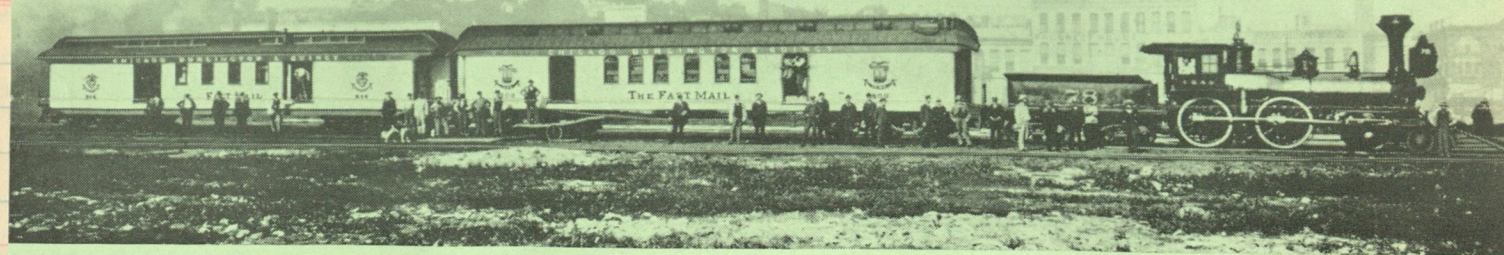
RPO

No. Sold Amount Clos. No.

The first special built R.P.O. was constructed by the Hannibal shops and placed in service August 1862.



1884-75 Years of Fast Mail Service-1959



THE FAST MAIL AS IT APPEARED IN 1884

BURLINGTON CELEBRATES 75th ANNIVERSARY OF THE FAST MAIL

The mail must go through! This has been the guiding light of the United States Postal Department since its inception. Postal leaders, never content to settle for the status-quo, were constantly seeking ways and means to speed the mail. After an unsuccessful effort in 1880, the Post Office Department in 1884 succeeded in establishing a "solid-mail" train between New York and Chicago and were looking for a railroad to handle the mail on a similar basis between Chicago and Council Bluffs-Omaha, from which point another railroad would deliver the mail on to California.

In 1884 the population of the United States was approximately 50,000,000 people while Chicago boasted only of 500,000. Further west the population thinned out, and Chicago was likened to the hub of a wheel, with the mail fanning out from it in spoke-like fashion, the volume of any one of which was felt to be insufficient to warrant the establishment of a solid mail train. With this major obstacle, it was not surprising, therefore, that Postmaster General Gresham and his assistants received little encouragement from the railroads when they came to Chicago holding forth an unadorned mail contract bereft of premiums or bonuses.

Cachet Will Commemorate 75th Anniversary of Fast Mail

A special cachet will commemorate the 75th anniversary of the first Fast Mail train west of Chicago next March 10.

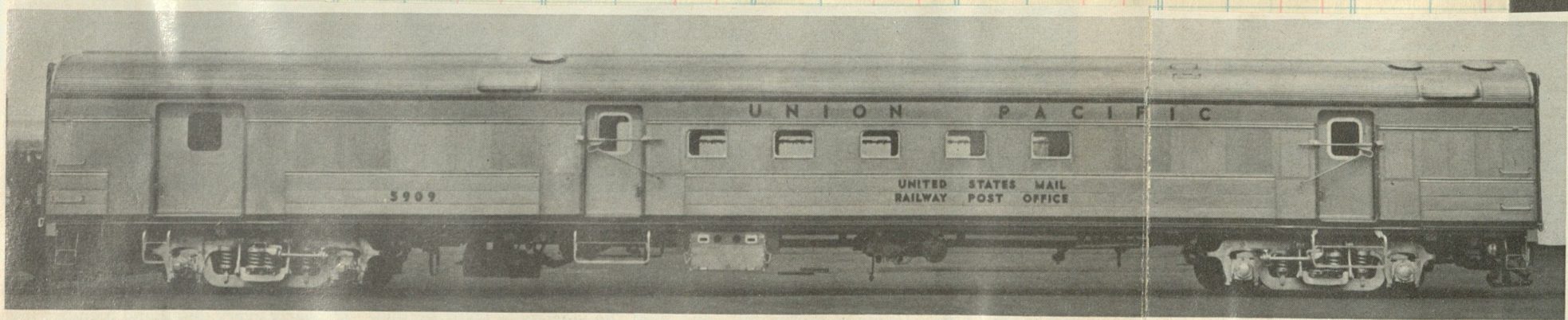
The cachet will be applied to envelopes to be put aboard the Fast Mail train No. 29, leaving Chicago at 9:00 P.M., March 10. They will be postmarked enroute by government mail clerks and dispatched to addressees from Omaha.

Collectors may send self-addressed, stamped covers to Fast Mail Cachet, Burlington Railroad, Room 1402, 547 W. Jackson Blvd., Chicago 6, Illinois. The covers must be received no later than March 6. The left half of the cover should be left blank, with the flap out.

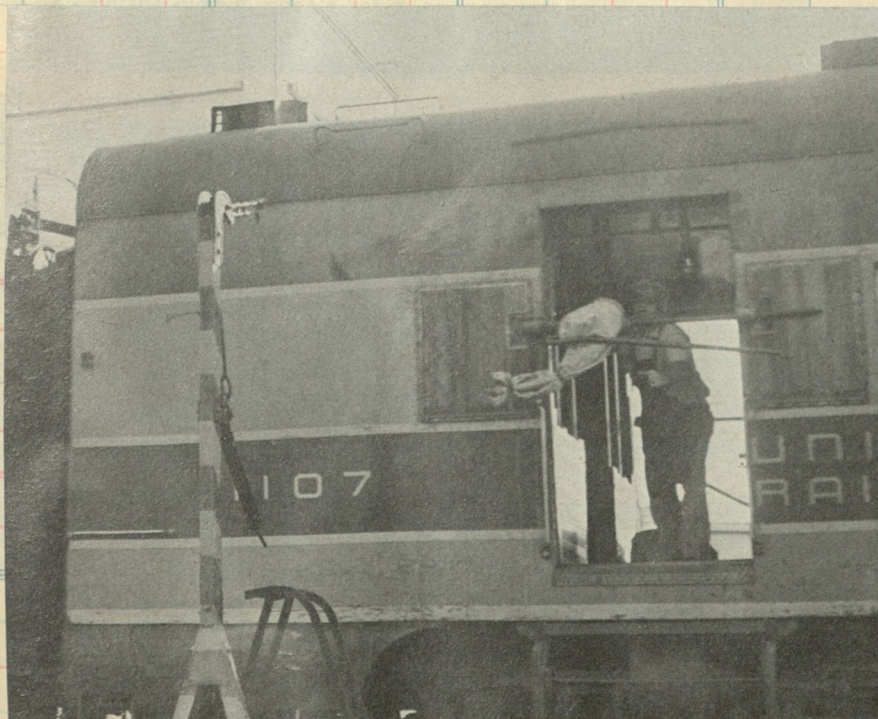
On March 10, 1884, after much deliberation, Vice President Potter of the Burlington agreed to undertake the operation of a "solid-mail" train between Chicago and Council Bluffs, a distance of 499 miles, on a schedule of 15 hours, 50 minutes. This was an average speed of 31½ miles per hour, a remarkable one at this date, on a six-day a week schedule. This was even faster

than the road's pride and joy, The Denver and Pacific Express, which required 20½ hours. Asked by the Postmaster General when the operation would begin, Mr. Potter replied, "Tomorrow morning, General."

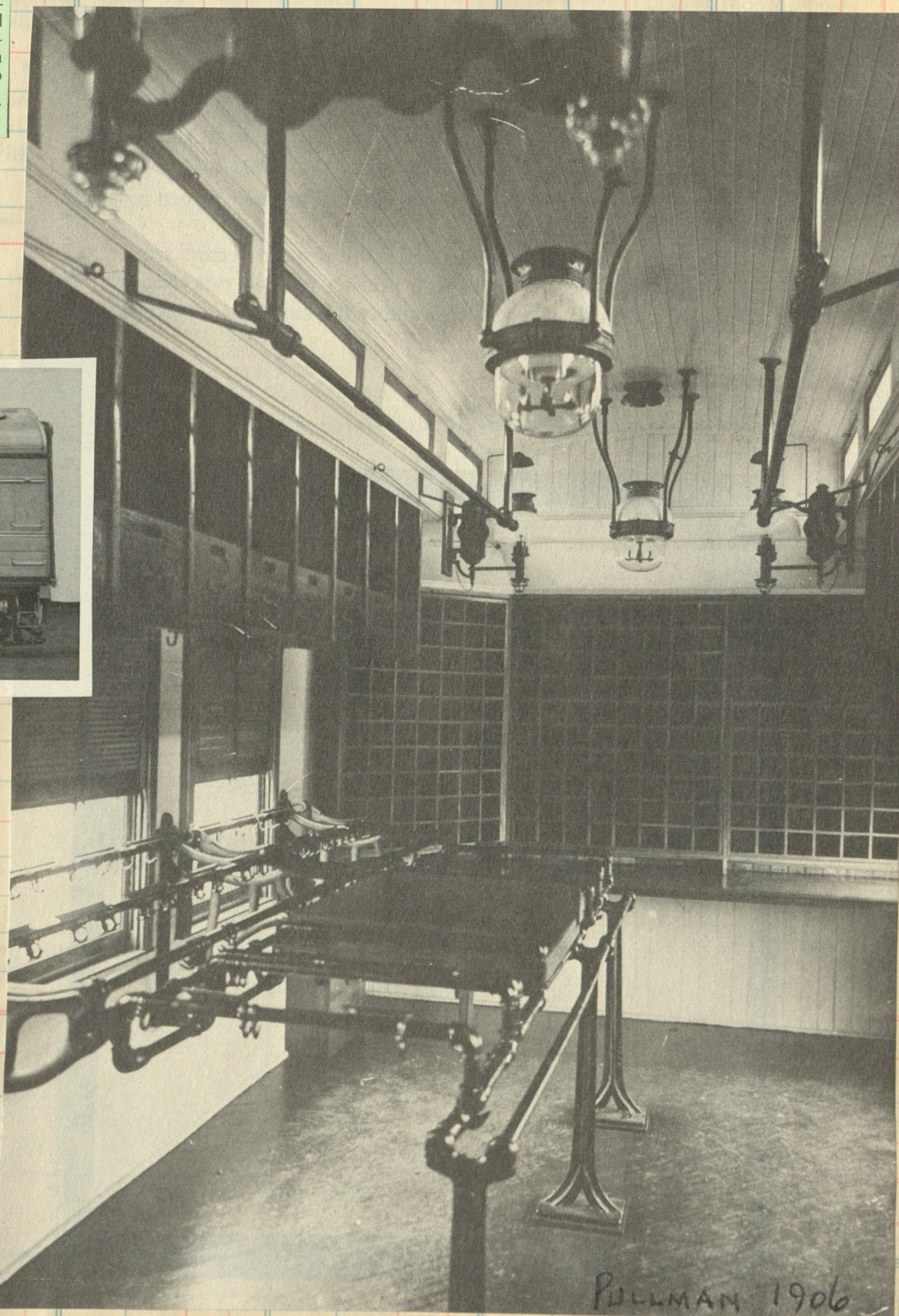
The first version of the Burlington's Fast Mail, born in the shadows of the old Union Station, departed that point the night of March 10, 1884. In addition to the small steam engine, there was a carload of mail from the East, a baggage car filled with Chicago newspapers and a special coach bearing the Postmaster General and his party and Vice President Potter of the Burlington. The Fast Mail, now in its third generation, has been operating ever since.



Among the very last R. P. O.'s constructed--1963



Above: 60 ft. distribution section of RPO car. Heat is thermostatically controlled and lighting is designed for fast eye work. For crew's comfort car also has steam food heater, electric refrigerator, water cooler and enclosed lavatory



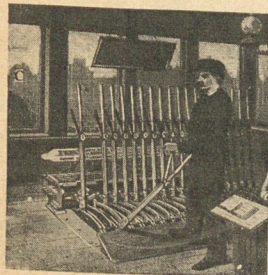
PULLMAN 1906

BUYERS INDEX

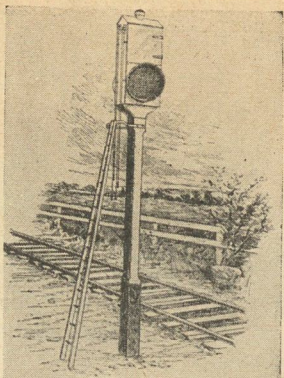
For location of advertisements of manufacturers listed in the Buyers Index, see Alphabetical Index on the last white page.



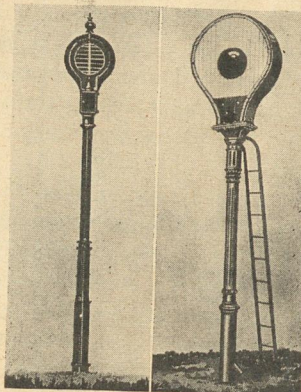
Interlocking tower on old Northern Central [P.R.R.] near Dillerville, Pa.



SAXBY & FARMER INTERLOCKING PLANT, 1875.



BANNER SIGNAL USED IN FIRST BLOCK SYSTEM.



TYPES OF AUTOMATIC SIGNALS
Picture on left shows exposed disc type automatic signal operated by clockwork, installed in 1879. Illustration on the right shows an inclosed Hall disc or banjo signal, 1871.

The Lionel Railroad Magazine For Boys

RAILROAD SIGNALS

WHAT THEY MEAN

Signal Indications

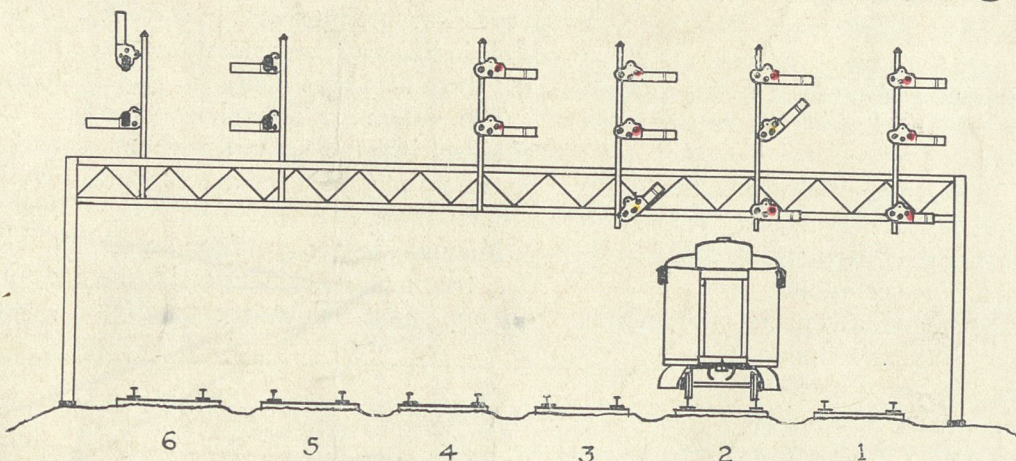


Figure 1

If you were a locomotive engineer approaching this complicated signal bridge on any one of the tracks, how would you control your train? Tracks 1, 2, 3 and 4 are for inbound trains. Tracks 5 and 6 are for outbound trains.

THE two previous articles on railway signals which have appeared in the Lionel Magazine described the various types and locations of signals. For the sake of simplicity all illustrations appearing in these articles pictured simple signals with but one indication on a mast.

Many signals in actual practice are of a multiple indication type,

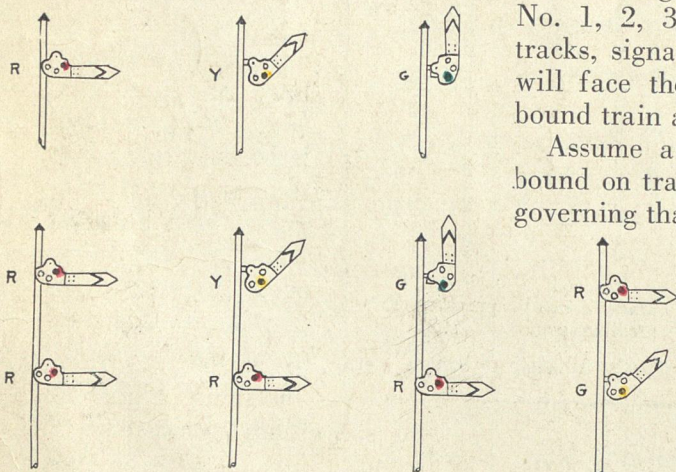


Figure 3

Stop, then proceed expecting to stop before next signal (one block clear)

Proceed, prepared to stop at next signal (two blocks clear)

Proceed, under control to stop

AUTOMATIC SEMAPHORE SIGNAL INDICATIONS

Letters opposite signals indicate Red, Yellow or Green Light.

such as the two semaphore arms on one mast, etc., and no study of signals would be complete without some knowledge of the meaning of these indications.

or "Continue at Reduced Speed." The reasons for giving the engineer such an indication are several—one would be because his train is to be switched to track No.

The rather complicated signal arrangement shown in Fig. 1 is really not difficult to understand because, first of all, only one of the signals on the bridge has to be read by the engineer as he approaches. Of course, just which signal the engineer has to obey depends upon which track his train is running on.

Referring to Fig. 1, if tracks No. 1, 2, 3 and 4 are inbound tracks, signals No. 1, 2, 3, and 4 will face the engineer of an inbound train as he approaches.

Assume a train is running inbound on track No. 2. The signal governing that train will always be located above or to the right of that track. The engineer, knowing his train is running on track No. 2, merely reads the indication of signal No. 2 which, as pictured in Fig. 1, would mean "Proceed under Control."

1, and for safety's sake, his speed should be reduced while taking the crossover.

Semaphore type signals are shown in the illustrations following.

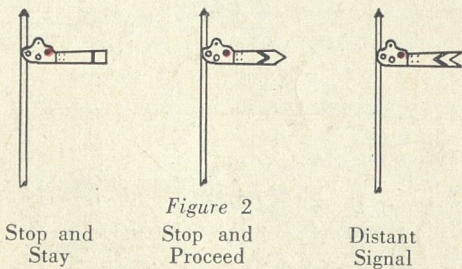


Figure 2

Stop and Stay

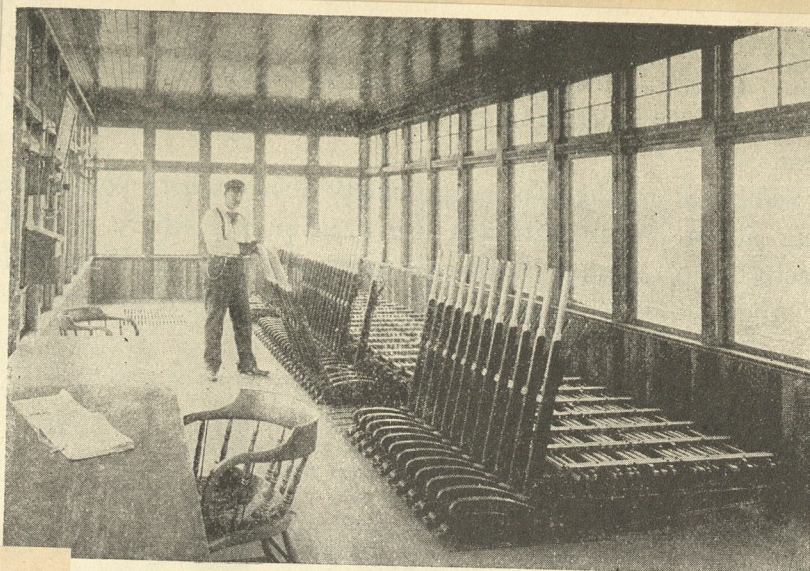
Stop and Proceed

Distant Signal

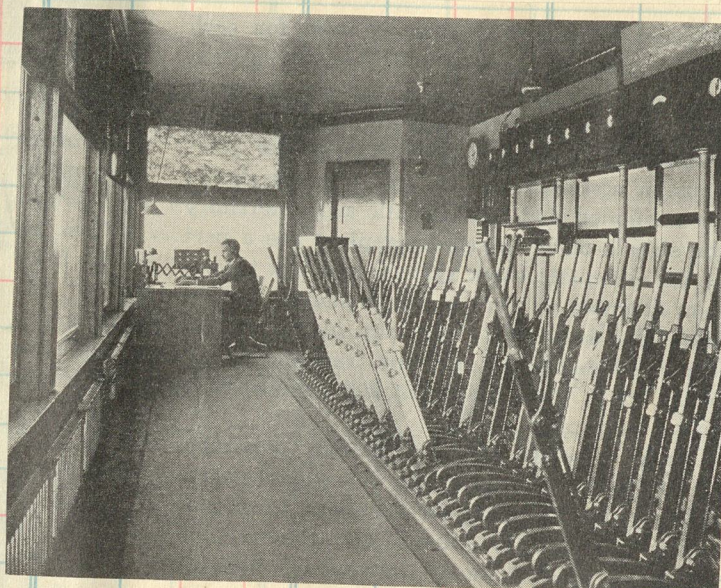
ing, although generally speaking, the arrangements and meanings would apply equally well to the "Color Light" or "Position Light" types.

Two classes of indications are given by signals. One is the "Stop and Stay" class, the other is the "Stop and Proceed" class.

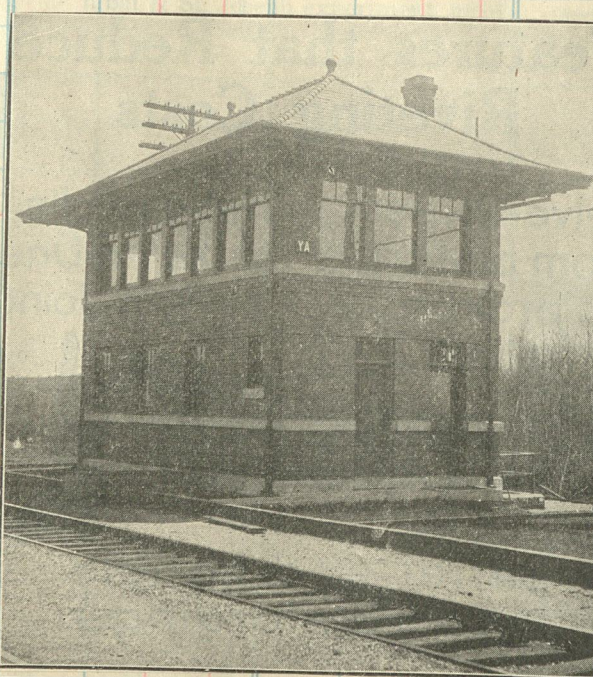
Modern automobile traffic signals and signs may be used to illustrate the difference between the two classes. The "Stop and Stay" signal corresponds in meaning to a red traffic control light—both mean stop and wait for the signal to change. The "Stop and Proceed" signal corresponds to the stop signs found at the curb of some intersecting streets, and means to come to a full stop; then proceed cautiously expecting to find something in the way.



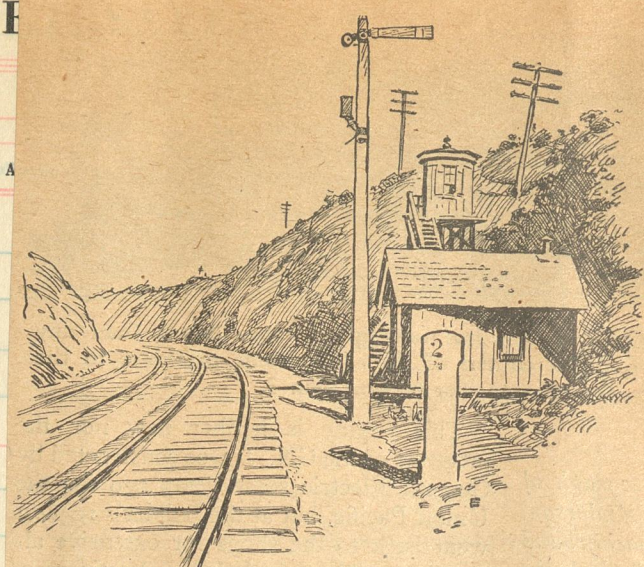
Interior of a Mechanical Tower, in which the Levers Move Rods Leading to the Switches



Interior of a Switch-tower, showing the Operation of Interlocking Switches.

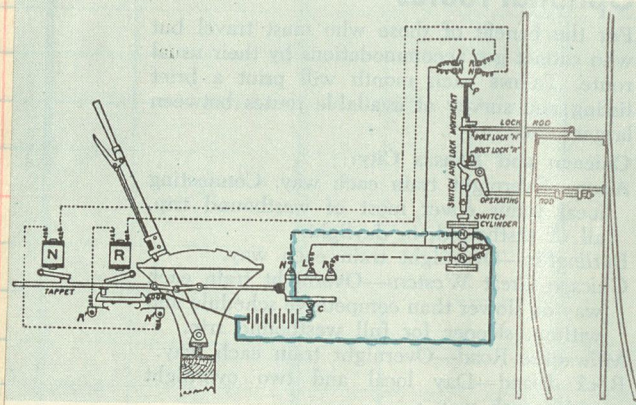


Typical interlocking tower. There was a time when thousands of such towers were in operation needed to keep trains moving.

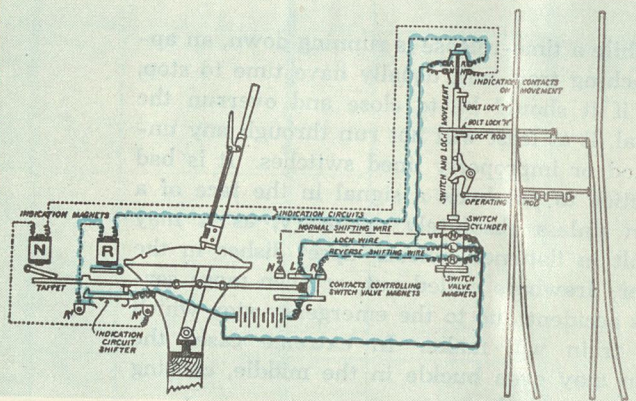


Picture from I. L. Gordon, Reading Co., Philadelphia, Pa.

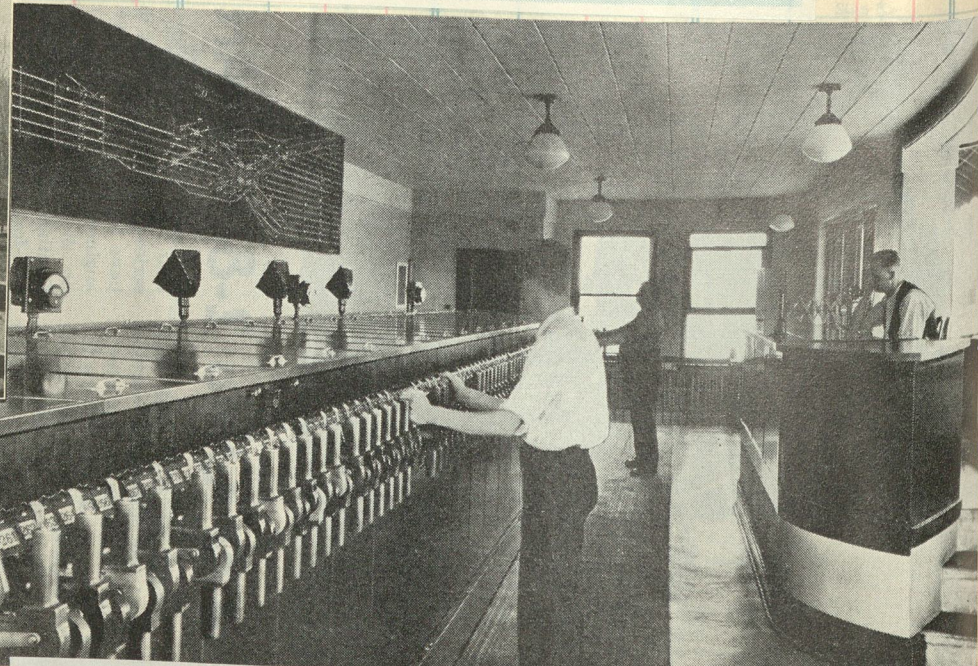
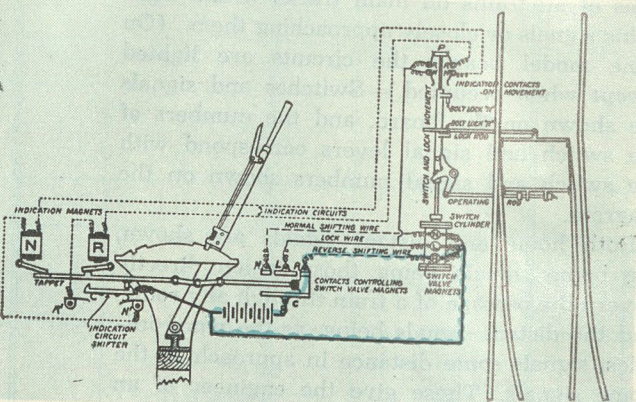
WORLD'S first electrically operated semaphore signal was installed by the Jersey Central at Black Dan's Cut, Phillipsburg, N. J., in 1893



How an electropneumatic interlocking works. The lever and tappet locks are in the tower. In this, the N or normal position, electric current flows to the N valve on the air cylinder, keeping the switch in the normal position.



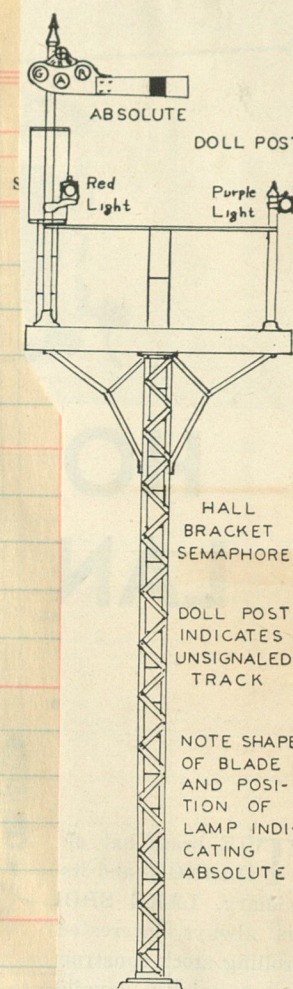
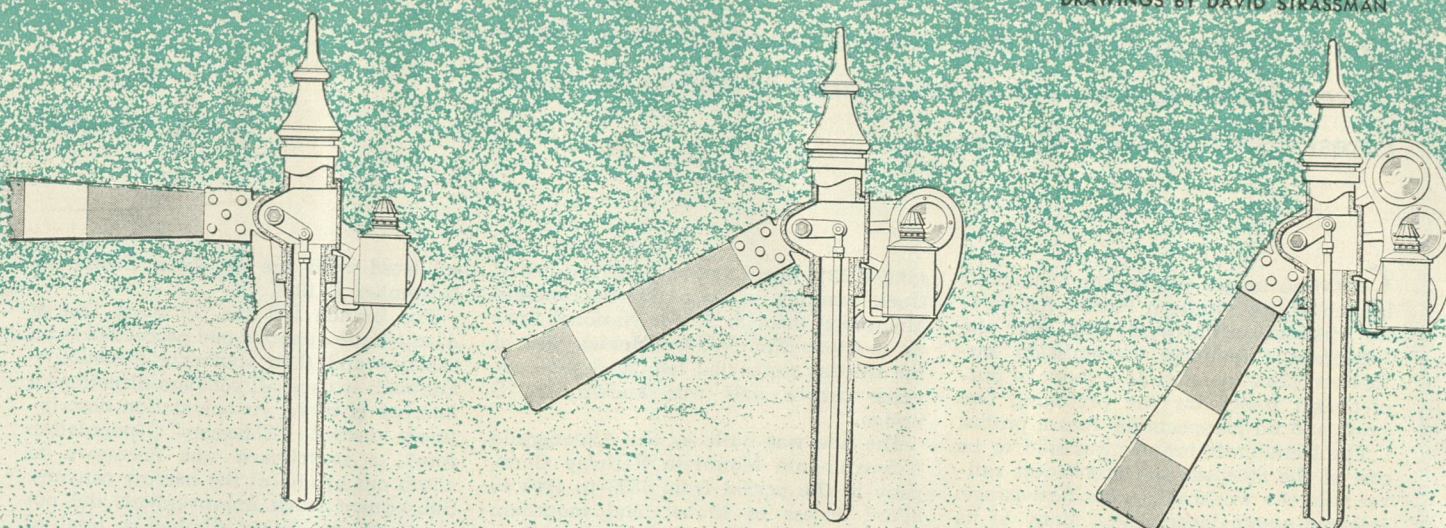
When the lever is first moved, the electric currents open the reverse valve on the air cylinder but the indication magnets will not allow the lever to be thrown all the way over until the switch itself has completed its throw and locked. Now the switch is in reverse position, and is safe to use.



Interlocking machine in tower at Toronto, Ont. Manned by two levermen and a director

How the electro-pneumatic semaphore works

DRAWINGS BY DAVID STRASSMAN



Electro-pneumatic semaphores were once widely used, but have been replaced in modern signaling practice by light signals. This particular type of semaphore was used extensively in electro-pneumatic interlocking plants, which use compressed air to operate the switches. Many electro-pneumatic interlockers are in use today, but in most cases the electro-pneumatic signals have been replaced by more modern types even at places where compressed air is readily available.

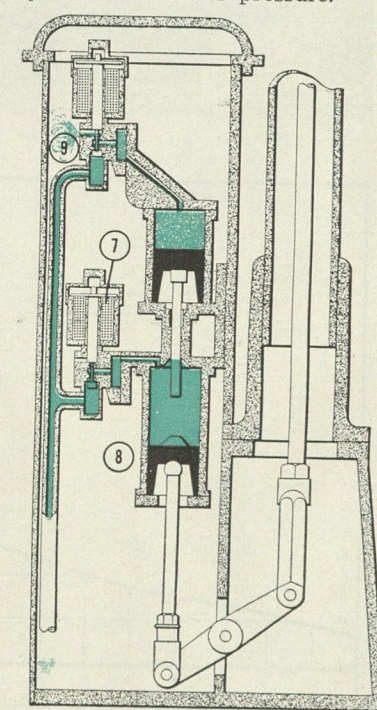
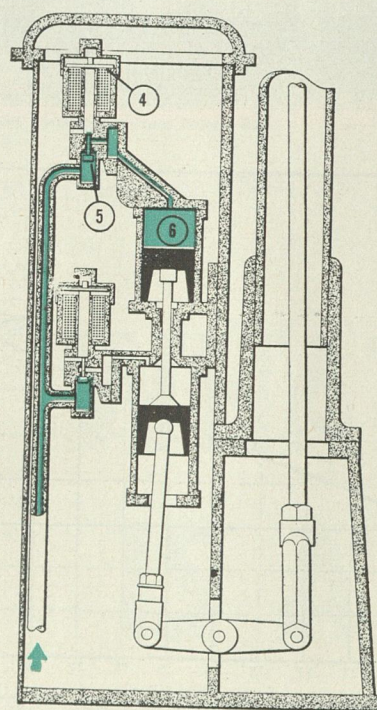
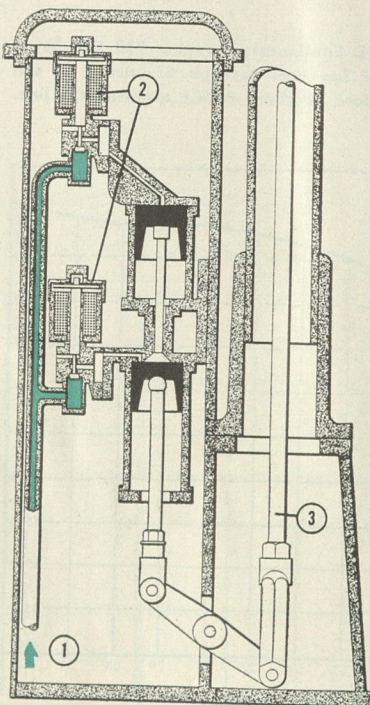
The electro-pneumatic semaphore depends upon a compressed air line for its power supply. Electricity is used only to operate the valves which admit the air to the operating cylinders. Our drawings show the mechanism of a lower-quadrant three-position signal as used for block signals in the early 1900's.

After a train has passed the signal, the mechanism is completely at rest. The

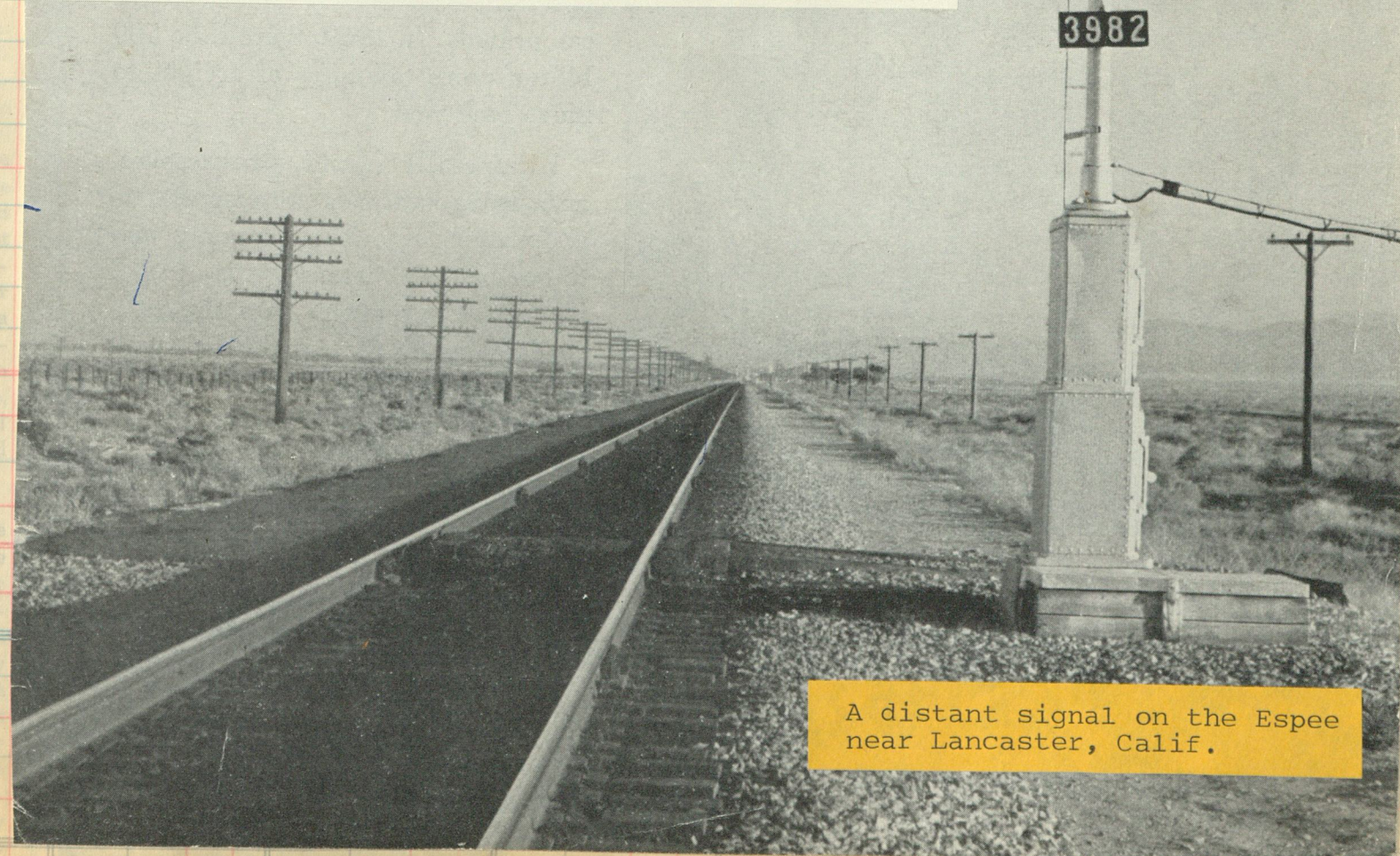
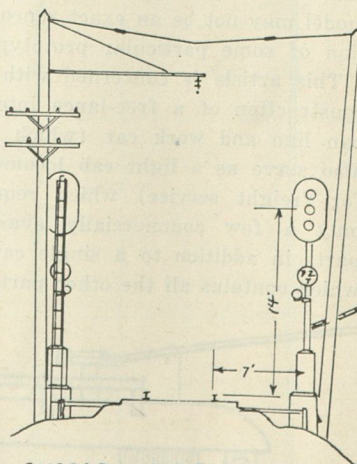
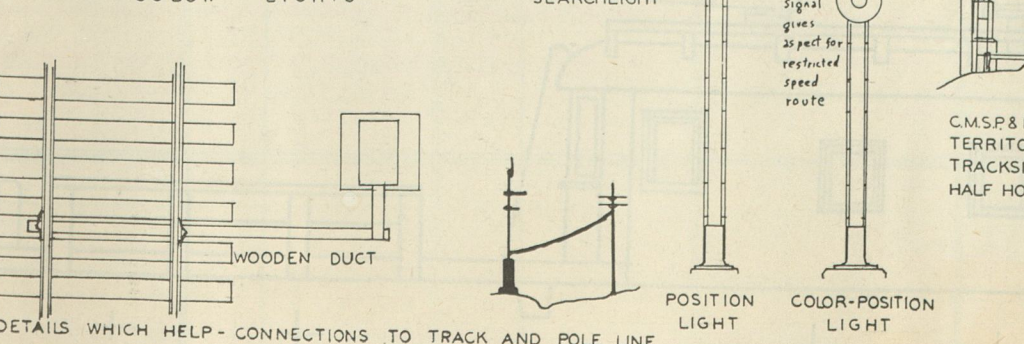
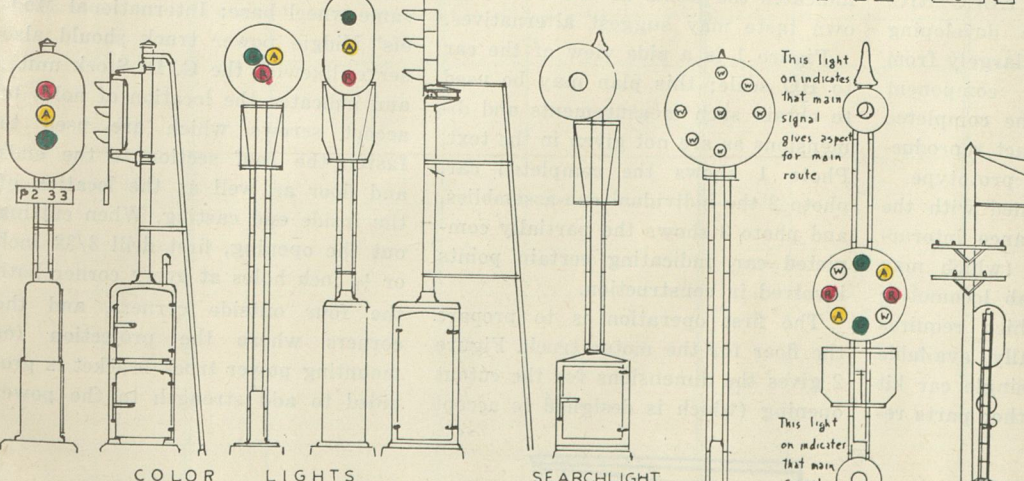
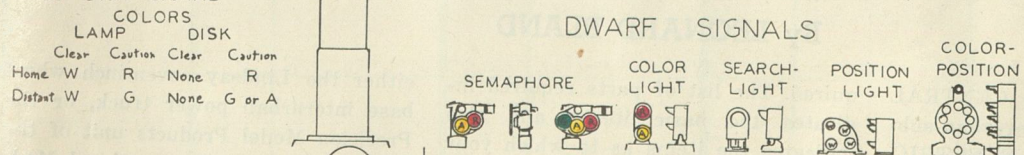
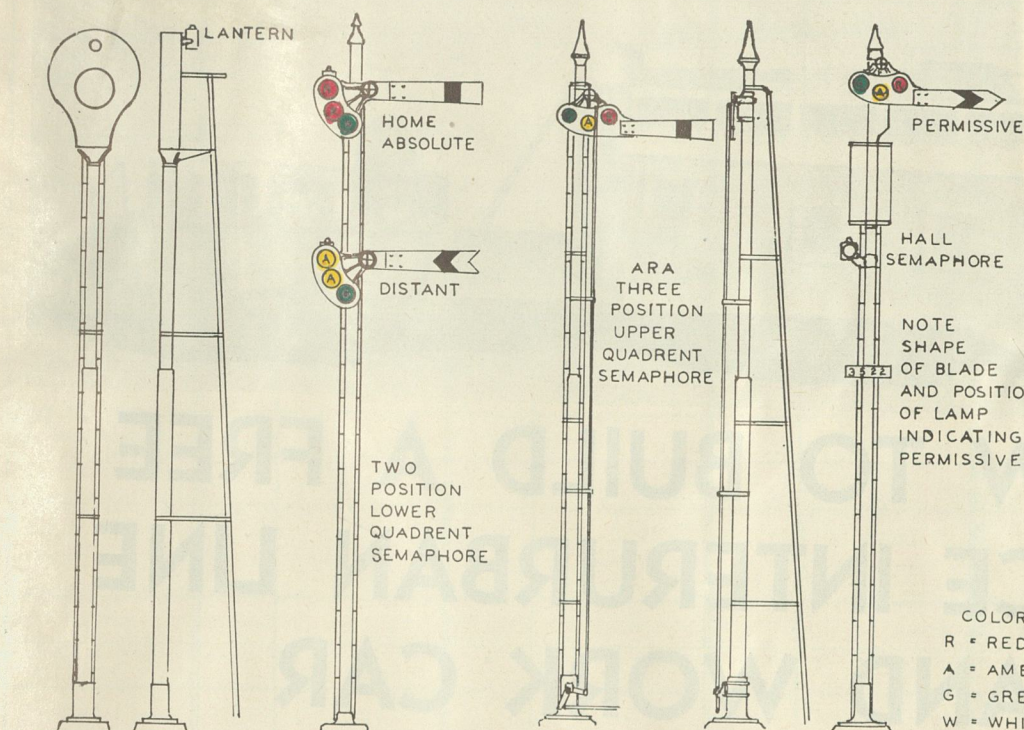
valves to the air supply (1) are closed because no electric current flows in the electro-magnets (2). The weight of the shaft (3) thus forces the semaphore arm to rise to the "stop" position and remain there. Note that a broken wire, pipe line, rail, or the failure of the battery or air compressor would all result in a "stop" indication.

When the train has passed down the track into the next block, the nearby track circuit is no longer shorted out by the wheels of the cars. Electricity then flows through the upper magnet (4), which opens the valve (5) from the air supply and closes the exhaust port. The compressed air forces the top piston (6) to the bottom of the cylinder. The piston rod pushes against the top of the lower piston, and the action lifts the shaft and lowers the semaphore arm to a 45-degree angle to indicate "caution."

When the train has entirely cleared the track circuits for two blocks, the bottom magnet (7) is energized. Air flows into the bottom cylinder and pushes the piston (8) all the way to the bottom, thus raising the shaft and dropping the semaphore blade to "clear." Some electro-pneumatic signals were arranged so that air could not enter the bottom cylinder unless it had first passed into the top cylinder, thus insuring against a false "clear" indication. In other systems this interlock was made through electric relays controlling the magnets. Draftsman David Strassman used artists' license to illustrate how the air exhausts to the atmosphere when the magnets are de-energized. He shows the top valve (9) closed, with the top exhaust port open. In actual practice the top cylinder would usually be under pressure as long as the bottom cylinder was under pressure.

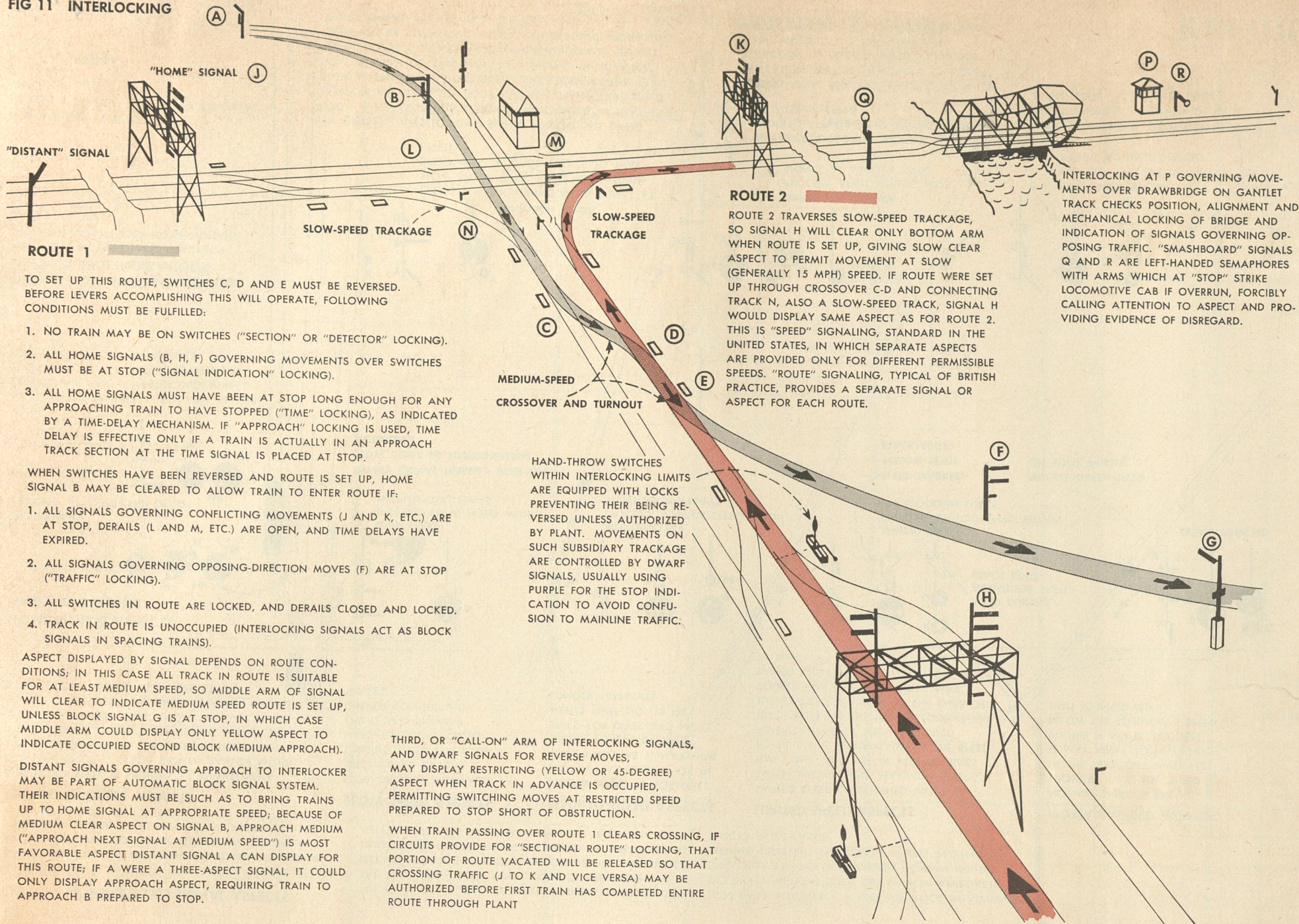


COLORS
R = RED
A = AMBER
G = GREEN
W = WHITE

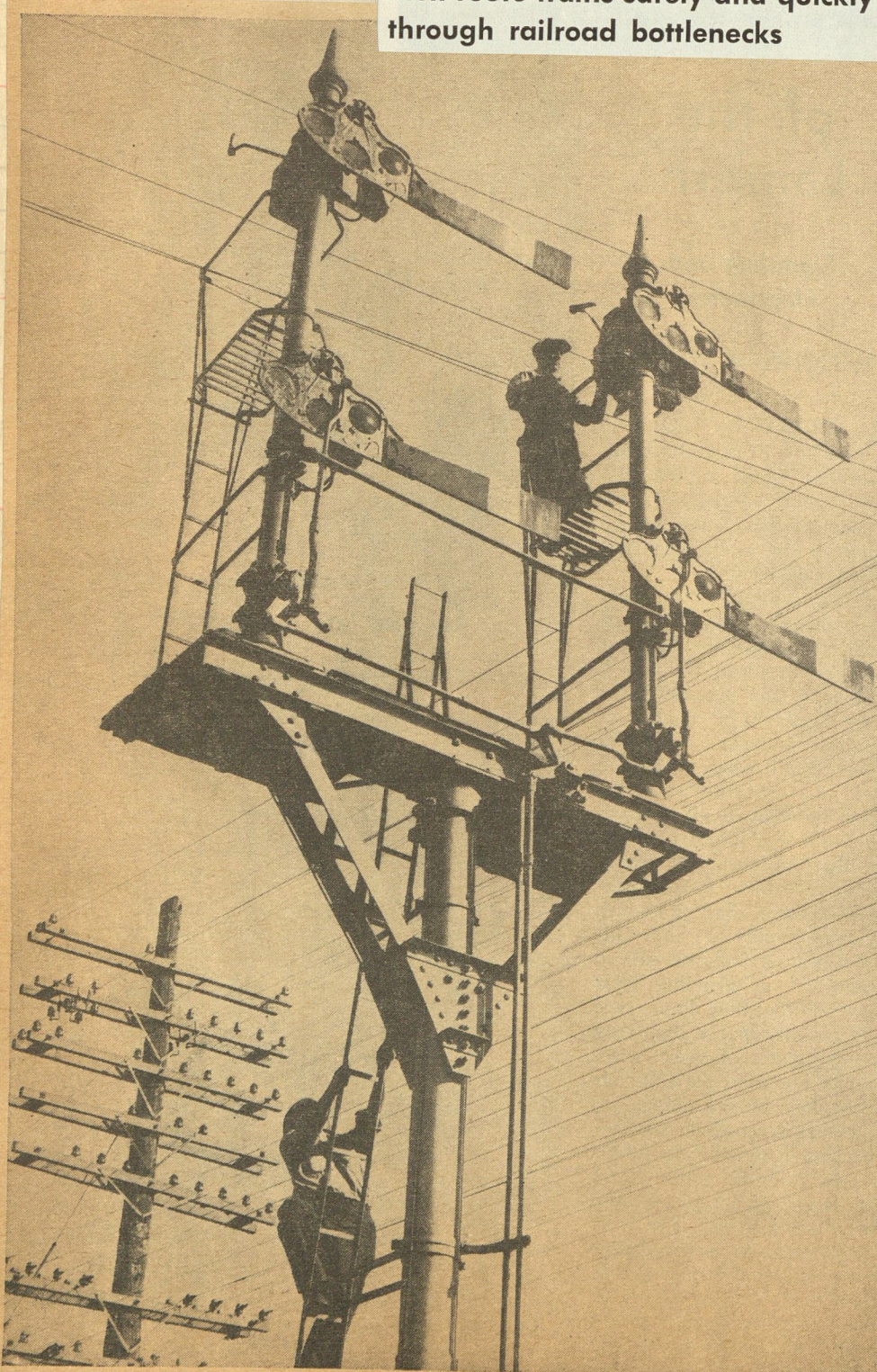


A distant signal on the Espee near Lancaster, Calif.

FIG 11 INTERLOCKING



Intricate interlocking machines help men route trains safely and quickly through railroad bottlenecks



UPPER QUADRANT semaphores. Present trend is away from movable signals

BACK IN THE DAYS... [Third trick]... Harry Temple

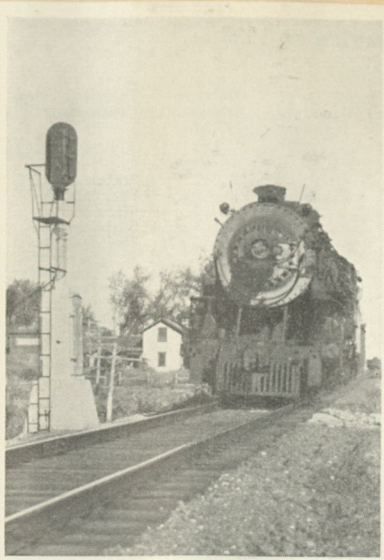
INDICATION	ASPECTS	INDICATION	ASPECTS
1a Stop.		4a Proceed over main route into occupied block. Permissive manual-block indication which is generally restricted to nonpassenger trains following a nonpassenger train. Manual-block aspects are usually distinguished by shape of arm, marker, or special instruction.	
1b Stop, then proceed prepared to stop for obstruction.		4b Proceed prepared to stop at next signal. Reduce speed at once to not more than medium speed.	
1c Stop, then proceed on diverging route prepared to stop for obstruction.		4c Proceed prepared to pass next signal at slow speed.	
2a Proceed at restricted speed, prepared to stop for obstruction.		4d Proceed prepared to stop at second signal.	
2b Proceed at slow speed, prepared to stop at next signal.		4e Proceed prepared to pass next signal at medium speed.	
2c Proceed at slow speed.		4f Proceed, approach second signal at medium speed. All NYC practice.	
3a Proceed on diverging route into occupied block. Permissive manual-block indication which is generally restricted to nonpassenger trains following a nonpassenger train. Manual-block aspects are usually distinguished by shape of arm, marker, or special instruction.		4g Proceed prepared to pass next signal at limited speed. All NYC practice.	
3b Proceed at medium speed, prepared to stop at next signal.		5a Proceed, manual block is clear. Second and third signals are PRR and LI practice.	
3c Proceed at medium speed, prepared to pass next signal at slow speed.		5b Proceed.	
3d Proceed at medium speed, prepared to pass next signal at medium speed.		Special On the Pennsylvania a ring of lights means lower pantographs for a change in power phase. The X is take siding.	
3e Proceed at medium speed.			
3f Proceed at medium speed through interlocking, then resume normal speed.			
3g Proceed at limited speed within interlocking limits.			

Commonly used signal indications and aspects.

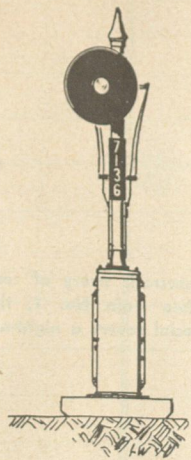
The indication is what the signal says to the engineer. The aspect is how the signal says it. Almost every railroad has some variations of its own and an all-inclusive chart of what the signals say is nearly impractical. But this chart shows the typical signaling practices, derived from both the special indications of large roads and the standards of the A. A. R. Naturally, all possible aspects are never used with any one multiple-arm signal. The aspects shown for position-light and color-position-light signals are peculiar to those types alone, but the aspects shown for the semaphore signals in-

clude the nighttime light aspects which are also the aspects used with color-light signals to mean the same thing. There is no point, thus, in showing both semaphore and color-light, except in the few special cases where the semaphore is never used, such as the DL&W and B&M color-light aspects, and certain NYC aspects shown only with searchlight signals.

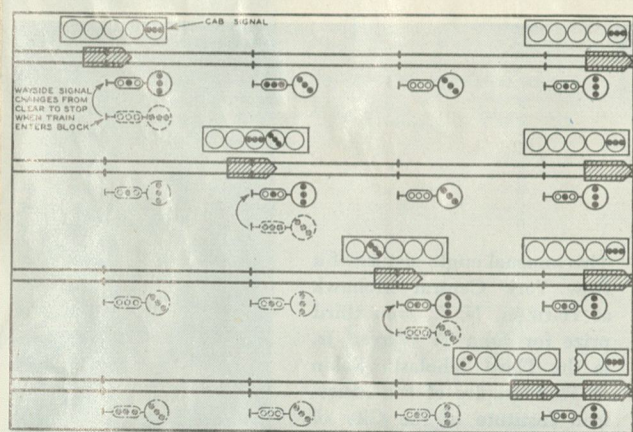
Note G: On some railroads certain automatic block signals have a yellow disk, or a disk or marker with the letter G or P. Such signals are known as grade signals. When such signals display aspect 1b, tonnage freight trains are permitted to pass the signal at slow speed without stopping.



Signals Keep Trains Moving



The four indications as transmitted from track to cab.

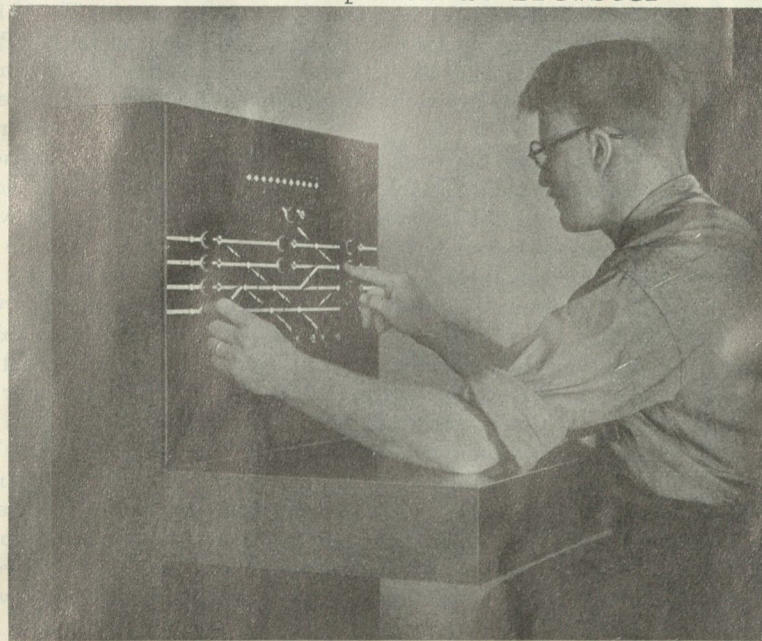


Union Switch & Signal Co.

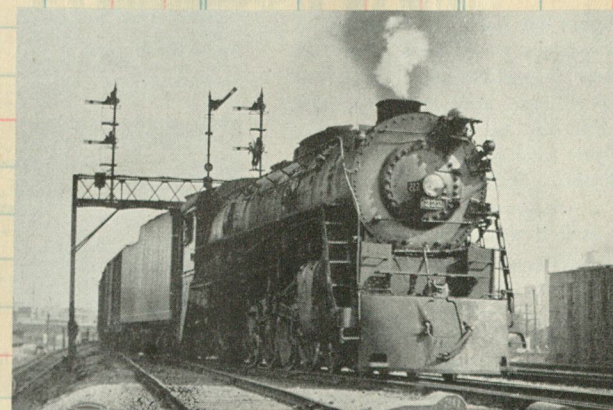
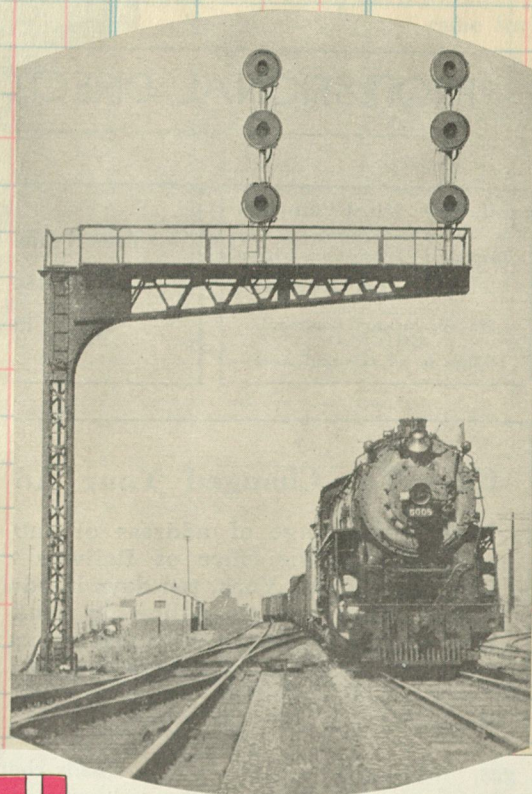


BREWSTER, N.Y. located 52 miles north of N. Y. city on the N.Y. Central's Harlem Div. End of the double track and terminal for most suburban trains. Station also served as an interlocking plant (14 levers) controlling all signals, switches, cross-overs, derrails for Putnam Jct. Yard. Putnam Division trains also terminated at Brewster. Office had five telephones plus telegraph wires. What with moving trains thru the plant, securing train consists, calling crews, selling tickets, OSing trains, answering fones, making reports. One qualified as a Telegrapher-Leverman-Clerk and that is just what it was-working three jobs but getting only one paycheck! The first and second tricks were considered as the "hottest" jobs on the division. The one job on the railroad where I really earned my money!

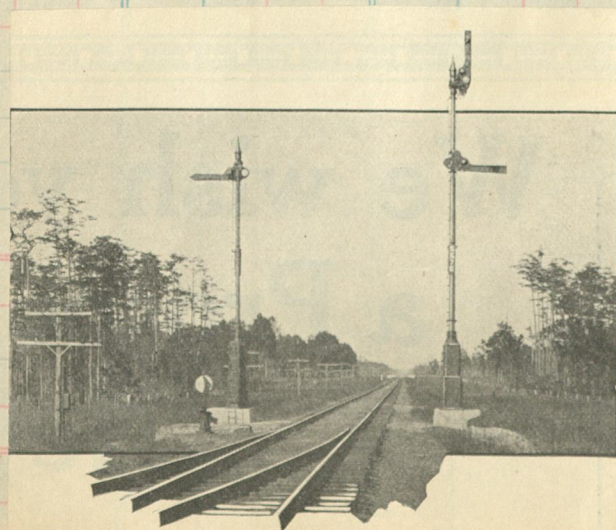
Similiar to NX panel at Brewster



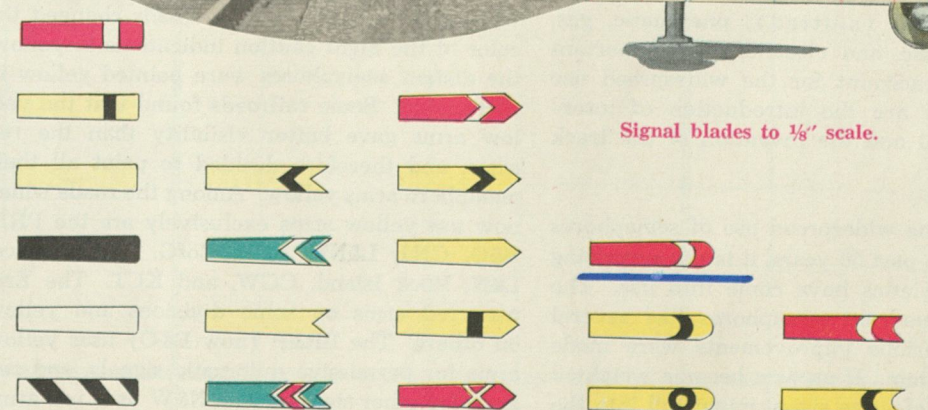
Ray McKnight (seated) as 1st trick Telegrapher-Leverman-Clerk with Signal Maintainer Robert Miller in the New York Central station-interlocking office at Brewster, New York 1964



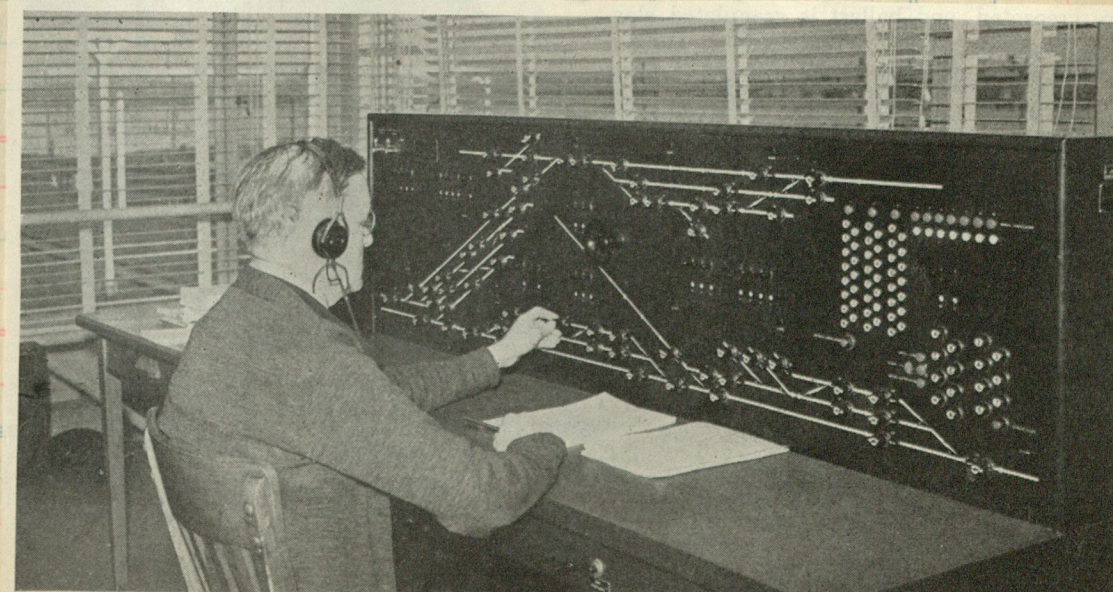
Mr. Tom Tracy, Towerman for the Milwaukee Rd at Duplainville Wis.



"Clear block"
"High green"
"Green on top"
"Green over red"

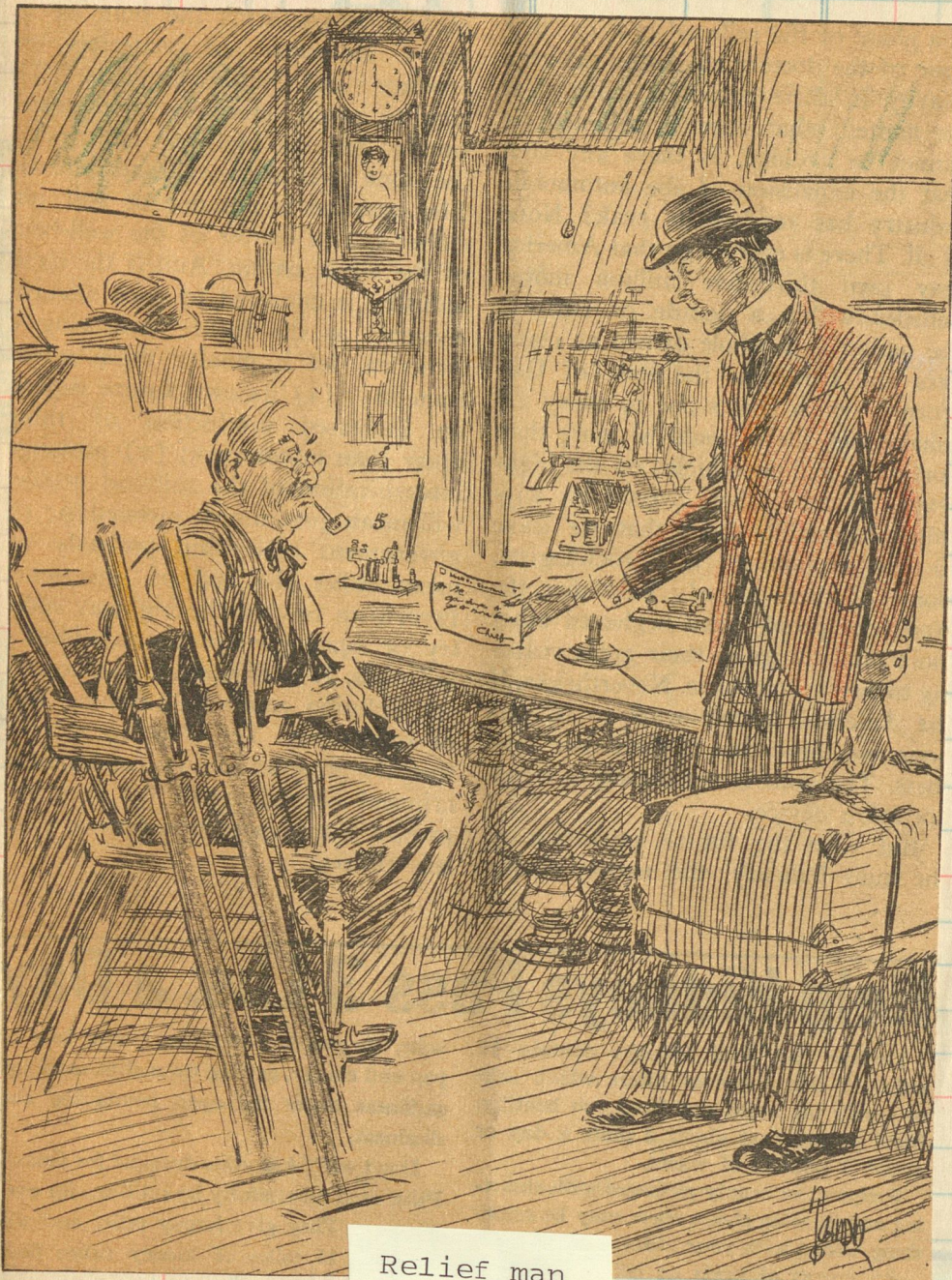


SQUARE END: Usual home signal on most railroads, also automatic signal on some roads. Black, white, or black-and-white is used on AT&SP according to background. FISHTAIL: Used as distant or caution signal. Green-and-red is C&NW. POINTED: Used as permissive automatic signal. Yellow with vertical black stripe is BR&P; red with white crossed stripes is L&HR siding signal. ROUND END: Manual-block or train-order signal. Interlocking home signal, NYNH&H. Yellow with circle is former PRR manual-block signal. CONCAVE: Train-order signal. Red with white stripe is Reading and N&W. Yellow with black stripe is L&NE.



Interlocking NX panel at east end San Francisco Bay bridge

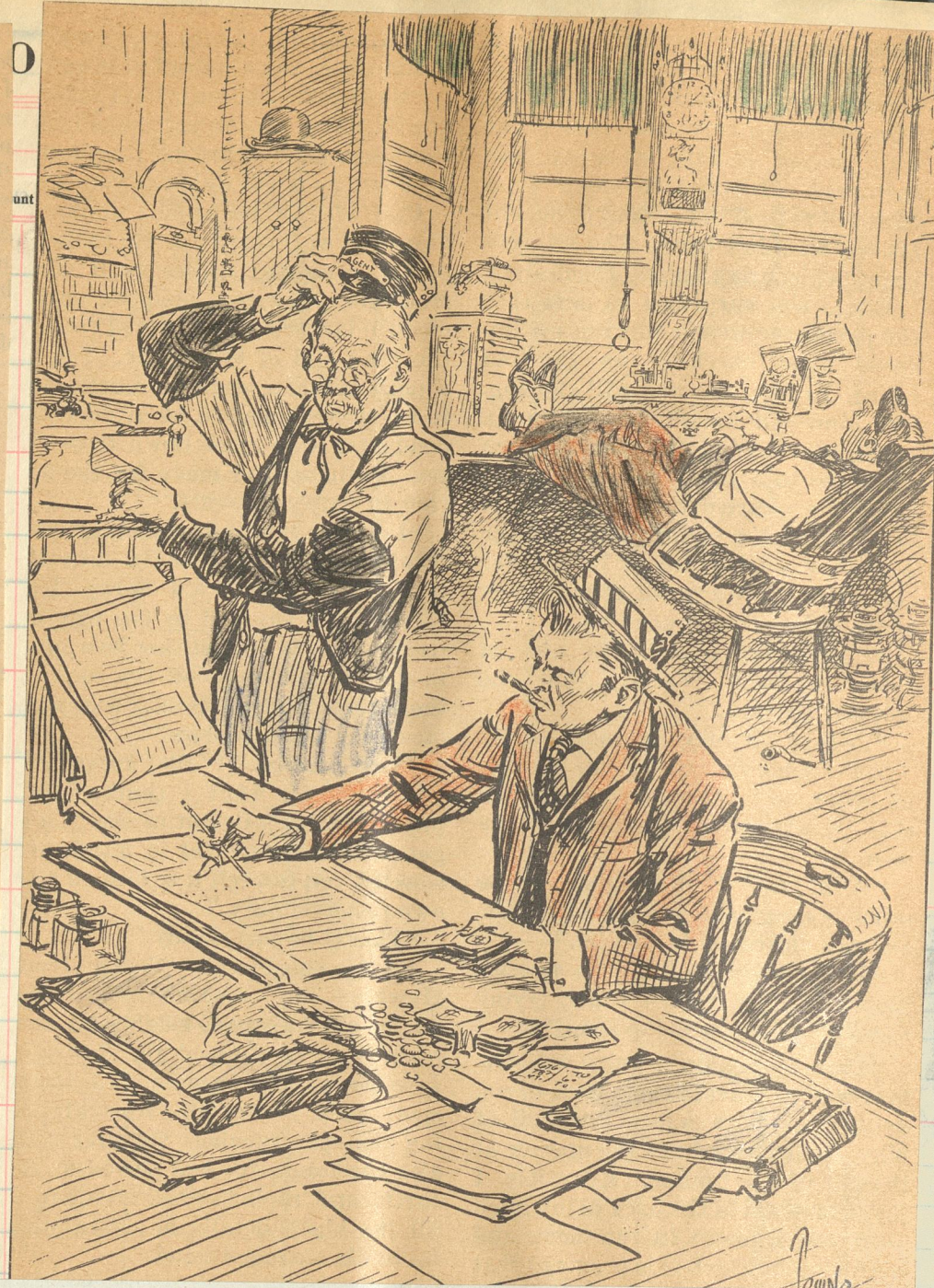
These drawings by Harry Temple appeared in the old Railroad Man's Magazine and brought back many a memory for this Editor.



Relief man



BACK IN THE DAYS (Student Op).....Harry C. Temple
"When you get that done, put up the switch lamps and the block light, then you can go home"



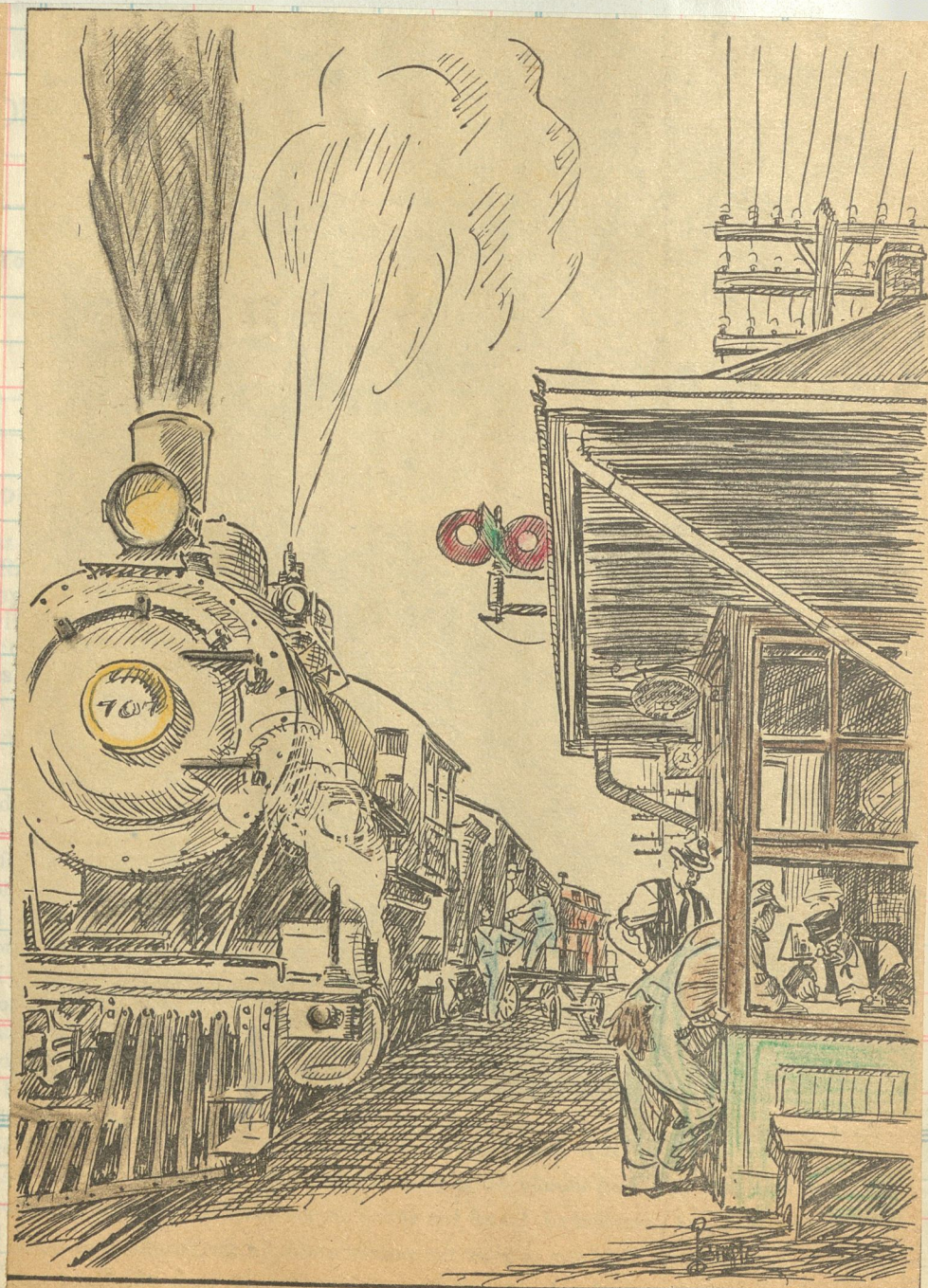
The traveling Auditor. We Agents never really appreciated his visits and pawing over our records. We had a rule of "keep the cash in order but always leave an obvious error in your bookkeeping for the auditor". Otherwise he would keep picking until he found something you might be trying to cover up. The auditor on the New York Central was always decent and helpful. Those, however, on the Railway Express Agency were a bunch of nitpicking s.o.b.'s.



Spring Fever



BACK IN THE DAYS: Wire Test.....Harry C. Temple
"He says he's good. Use th' bug and give him th' works!"



BACK IN THE DAYS: "A 19" Order for the Peddler



MODERN relay, key and sounder



A watercolor by Gil Reid of the station at Saranac Inn, N.Y. on the New York Central's Adirondack Division. My father was Agent here from mid Thirties thru mid Fifties and the office where I learned the many duties of being an Agent-Operator. My first job on the railroad was at this office in August 1938 as second trick operator.



In the summer of 1940 I transferred to the N.Y.C.'s Harlem Division and my initial job there was on 2nd trick at Dover Plains, N.Y.

NEW YORK CENTRAL SYSTEM

J. J. DANHOF, JR.
DIVISION SUPERINTENDENT
L. A. BAGGERLY
TRANSPORTATION SUPERINTENDENT

466 LEXINGTON AVENUE
NEW YORK, N. Y. 10017

August 19, 1965

File: Q-McKnight

Mr. Forest R. McKnight,
Tel-Clk-Leverman, Brewster.

Dear Mr. McKnight:

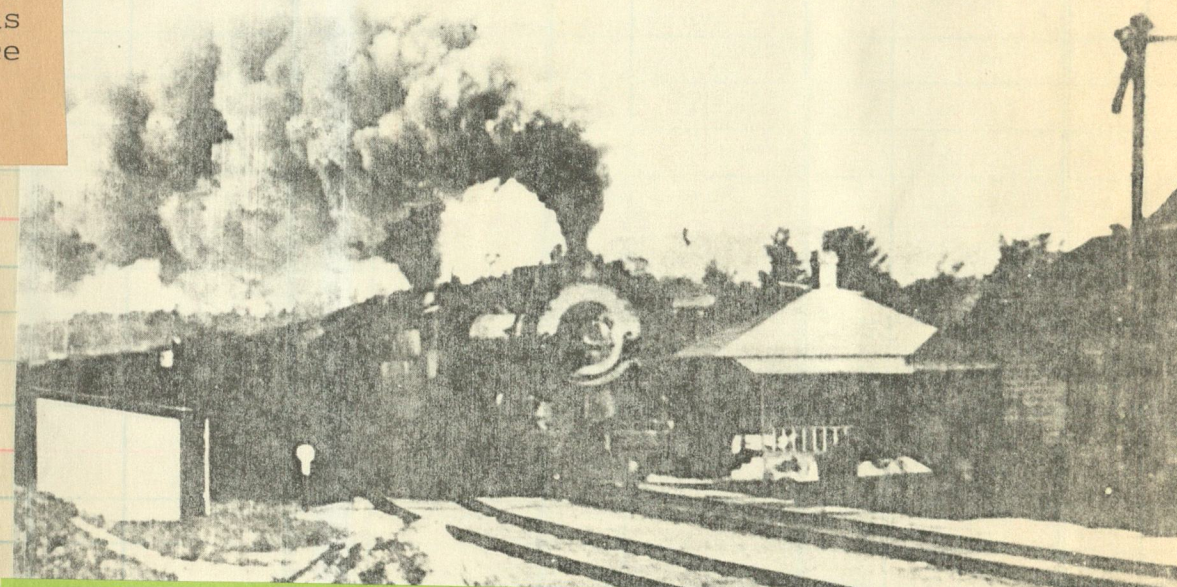
I am pleased to enclose herewith letter from Mr. L. B. Fee, Vice President Employee Relations, congratulating you on completion of twenty-five years of continuous service with the New York Central System as of this month.

As outlined in attached letter, it is a record of which you may be proud and I wish to add my personal congratulations, as well as those of Mr. Danhof.

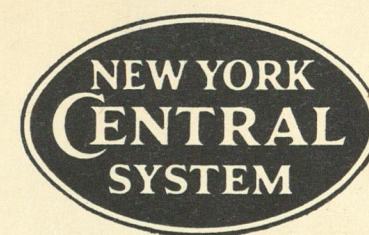
It is my earnest hope that your continuous service will be continued for many more years, and with all good wishes for the future, I am

Sincerely,

L. A. Baggerly
Transportation Superintendent.



Adirondack Division Time freight #90 charges thru Mountain View, N. Y. on August morning 1916. My father was Agent here for many years and I was born in the Agent's cottage shown at right of the engines. Today, every man made object in this foto has disappeared and area reverting to wilderness.



Ticket Agents' Training Program

This is to certify that

FOREST R. MCKNIGHT

has successfully completed the Ticket Agents' Training Program
in Salesmanship, Tariffs, Equipment and Accounting Procedure,
conducted by the New York Central Railroad Company.

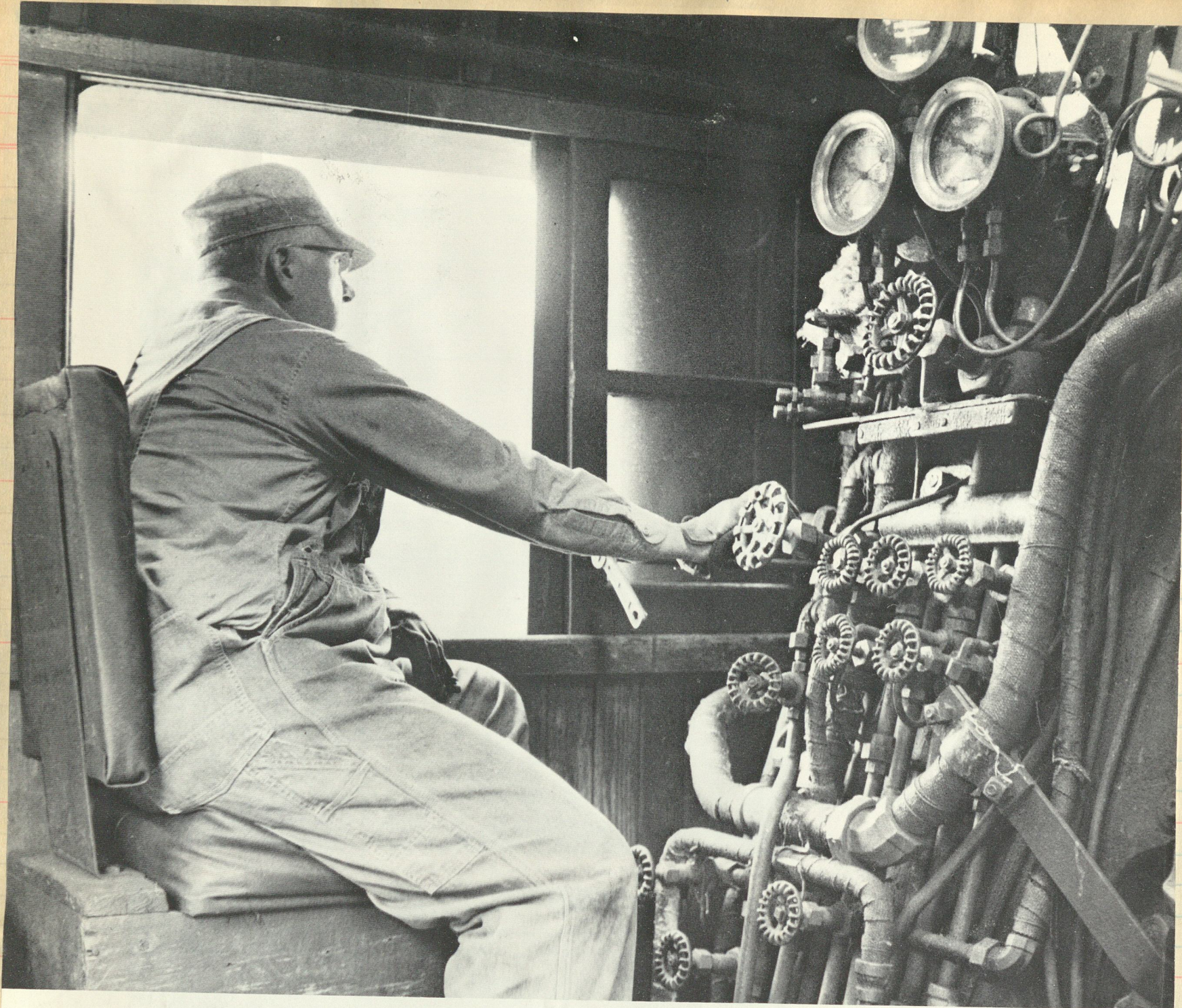
J. B. Hawke
General Manager

S. P. Nickerson
Vice President, Passenger Services

January 20, 1954

Manual block station at Baldwin Place, N. Y. ("BC") forty miles north of N.Y. city on the N.Y.C.'s Putnam Division. Had the Agent's job here Sept 1954 to Oct 1957.

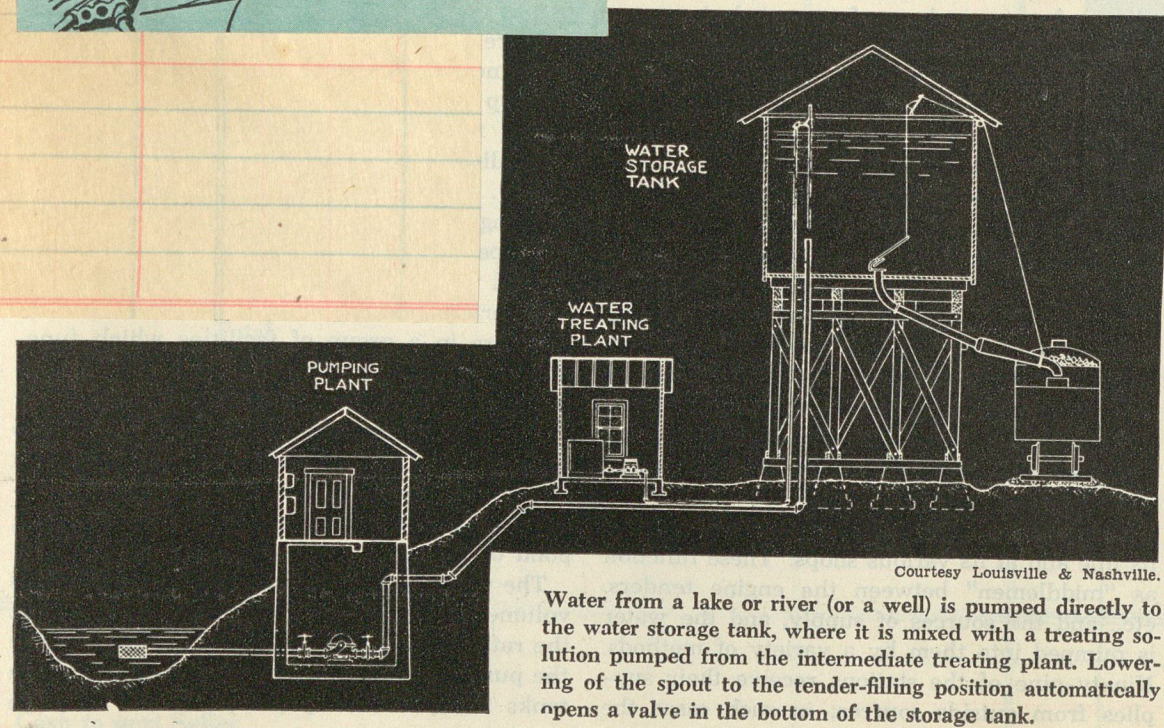
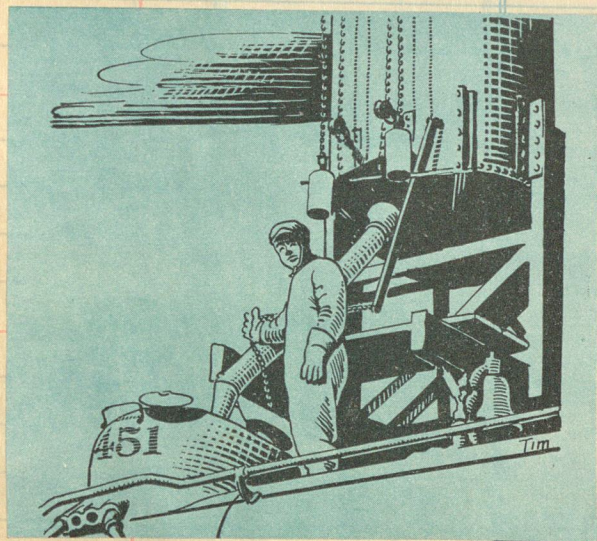




Sitting in a cab and reminiscing with the trainmen always created in me a feeling of envy and the sorrowful conviction that I had been born too late, that I had missed out on an era when men and machine depended on each other. Being in *any* cab was great—even at rest. The smell, the inner-life of the machine felt through the soft panting, cab-throbbing air pumps, and the constant sizzling of water dripping on the backhead. Seems like I always watch that steam gauge... sputterings came from a leak somewhere.



A DRINK *for*
the IRON HORSE



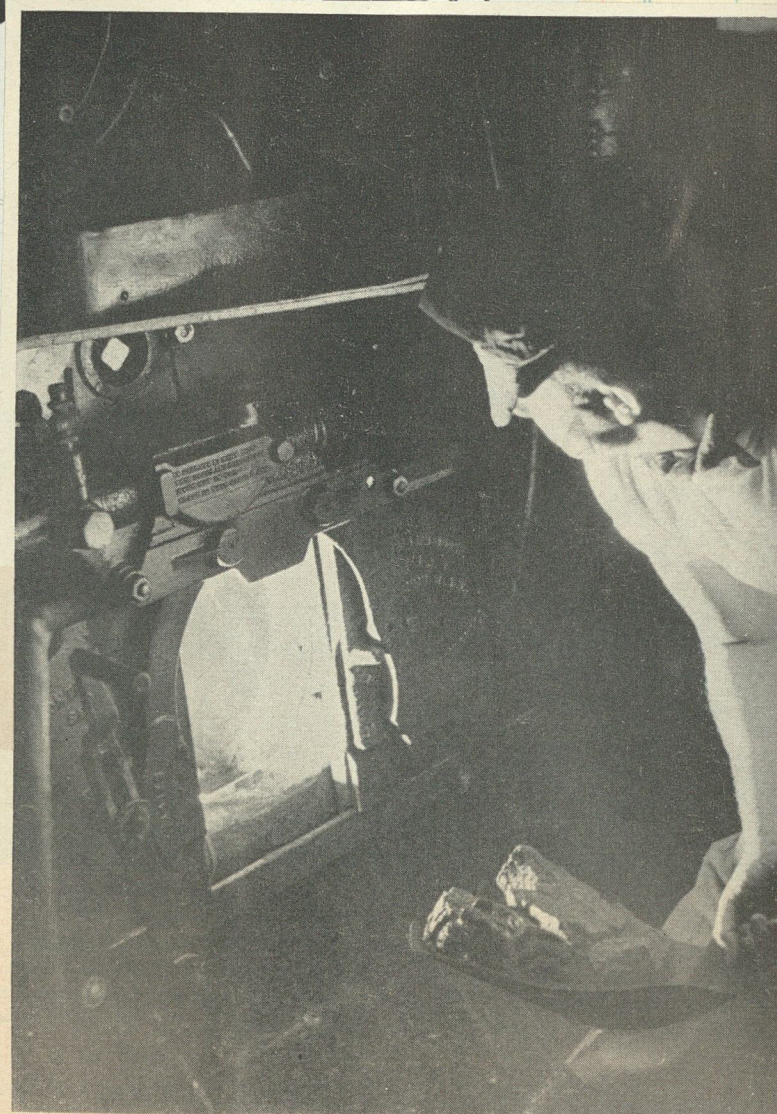
Fever of the Rail

THEY may talk of fevers, chills,
And a thousand other ills,
That go to make the doctors' human code,
But the worst I know of yet,
Makes a feller fuss and fret,
Is the hopeless, restless fever of the road.
With the smoke and grease and dust,
And the cinders, oil and rust,
And a million funny, friendly railroad
smells;
With the lights white, green and red,
Runnin' through a feller's head;
Once he's worked there, why he won't work
nowhere else.

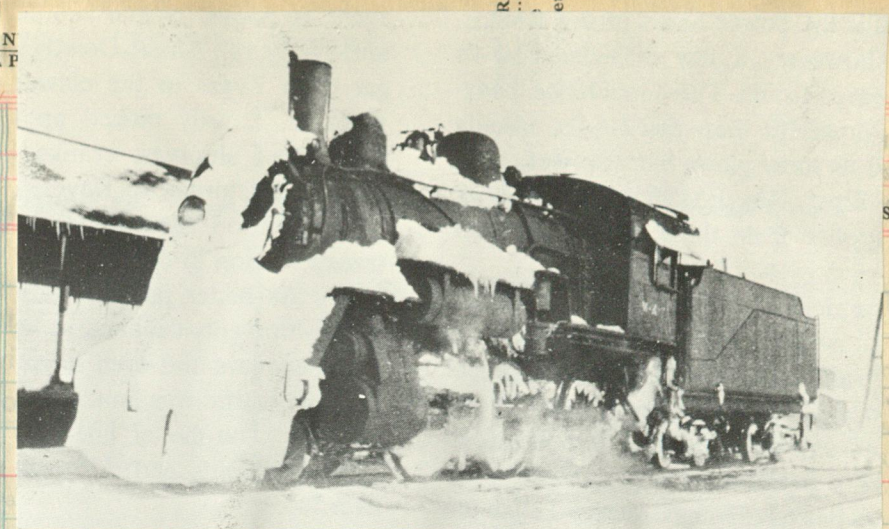
They may have their tariff rates,
And their traffic sheets and plates,
And the policies that seem to run the line;
But the whir of Number Two
When she's twenty overdue,
To me is like the joy of rare old wine.
And I love the busy yard,
With the engines chuggin' hard,
And the whistles, bells, and swearin',
swearin' crews,
And the north and south bound freights,
And the sidin' clearance waits,
With the fireman a cussin' at the flues.

There's the traffic's steady stream,
And the hiss'n' of the steam,
And chugs and roars and other nameless
sounds;
And there's locals always due,
With an extra work or two,
And crews a gettin' ready for the rounds.
There's the wheezin' noise of air,
And the headlight's guidin' glare,
There's the station whistle of the through
express.
Oh, the clickin' of the wheel,
On the burnished stands of steel,
Is as soothin' as a mother's soft caress.

When the caller comes in vain
And another's on my train,
And I'm far beyond the reach of discipline;
When I've made my last long run,
On my final "Thirty-one"
And I'm not laid out by heated box or pin;
When I've made my last mistake,
And old Time throws on the brake,
And the boys they miss me when they pass
the cup,
I won't heed the semaphore,
But I'll walk right in the door,
And I'll get a job in Hades, firin' up.
—Anonymous



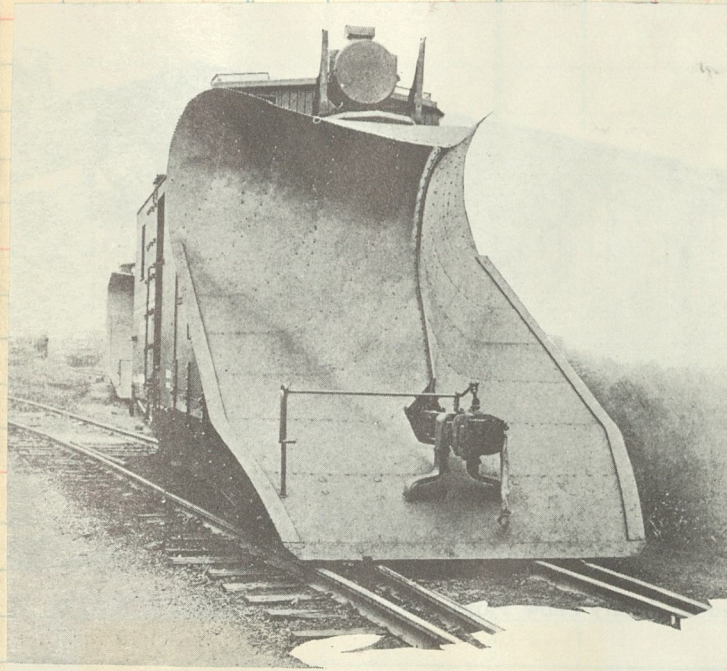
Next Seller's Signature
Total Accounted for



119

Severe winter storms seemed to be the one challenge of nature that railroaders enjoyed meeting head on. The only thought was to keeping the road open and trains running.

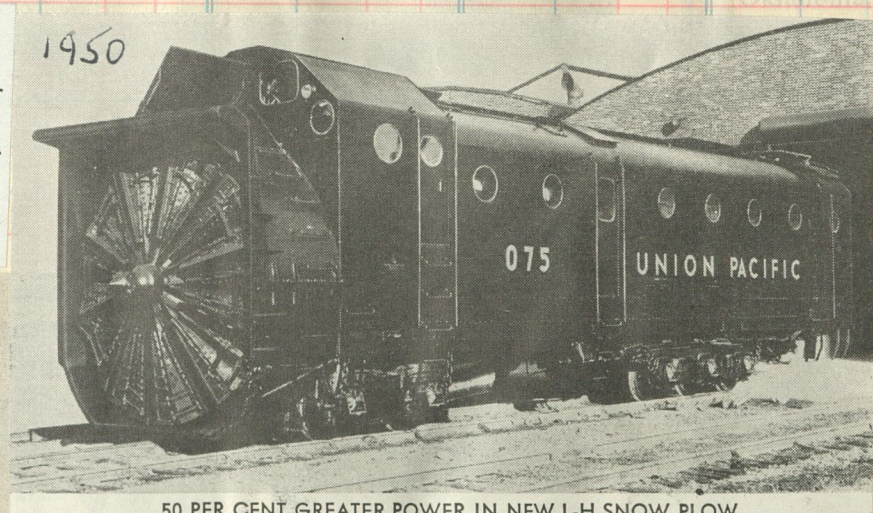
Railways of the United States spend millions of dollars each year keeping their lines operating in even the fiercest winter weather, while their competitors on the highways wait for the government to clear the roads. In this article, TRAINS tells the story of railroad snow-fighting on one midwestern railroad during the particularly bitter winter of 1935-36, and of how the railroad kept trains running when all other means of transportation were tied up.



-Q & C Push Snow Plow for Heavy Duty Work. The Q & C Co.

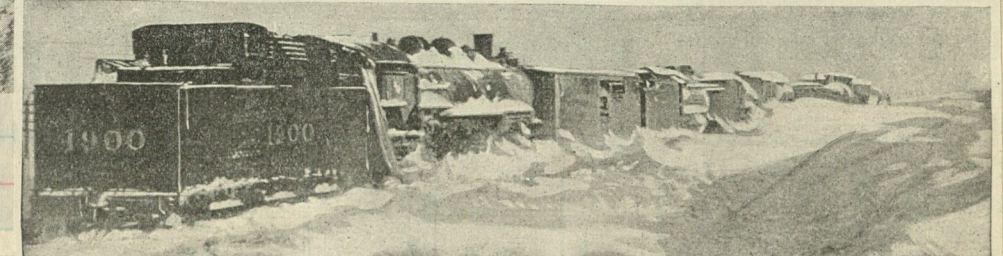
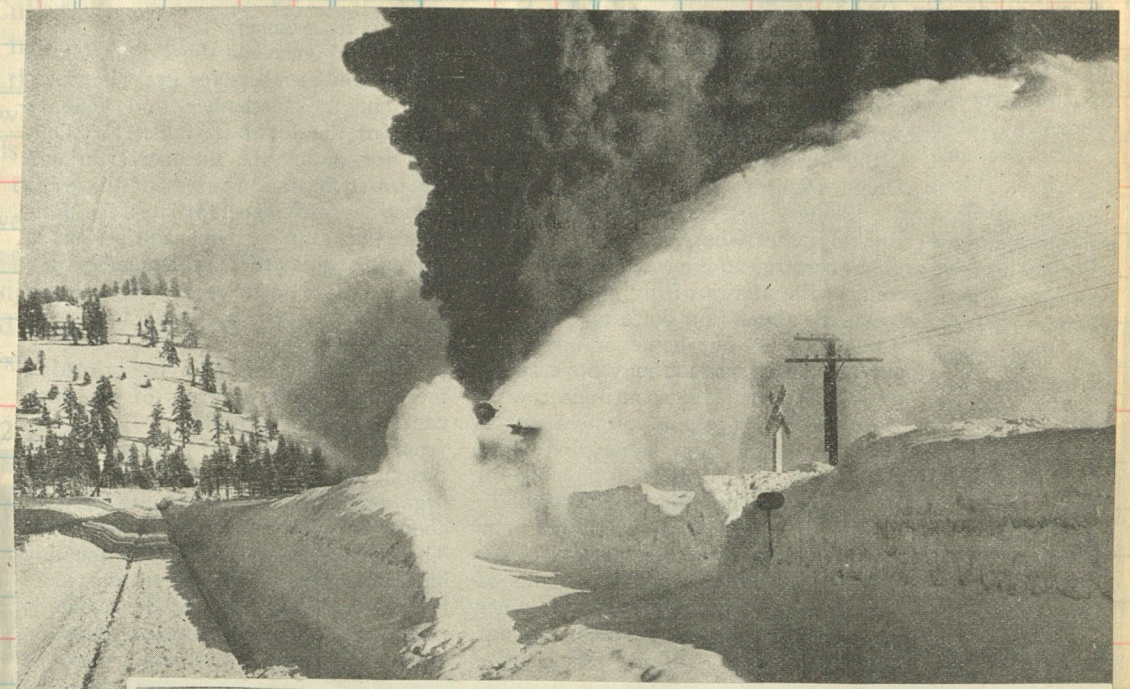


On many roads the rotary was the most important piece of equipment. Without it winter operations would be impossible.

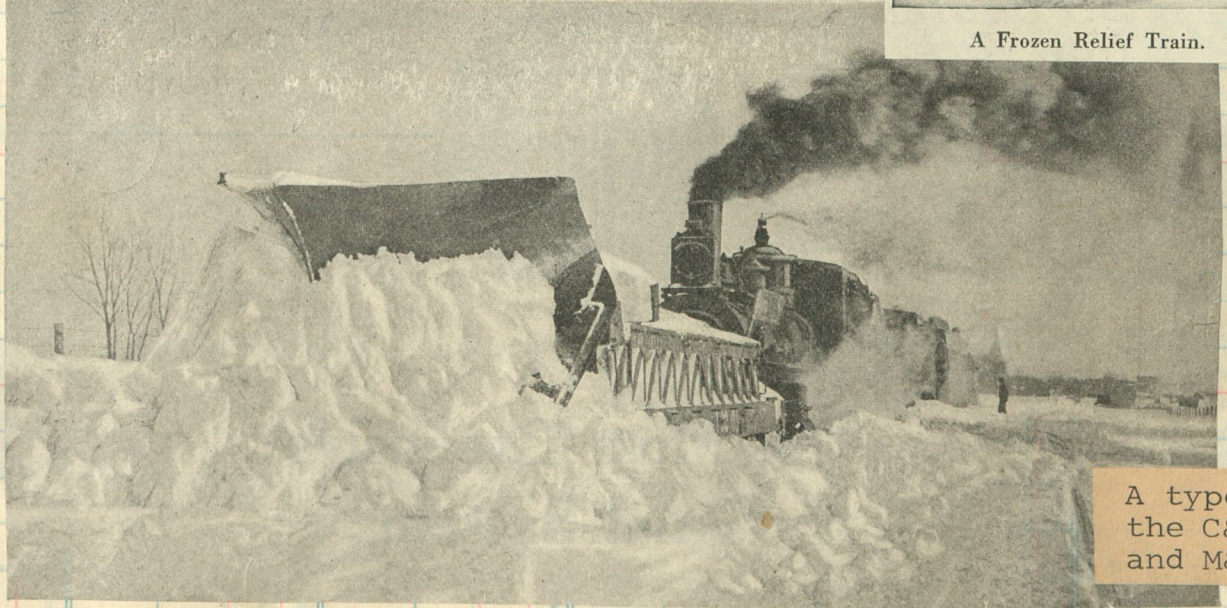


1950

50 PER CENT GREATER POWER IN NEW L-H SNOW PLOW



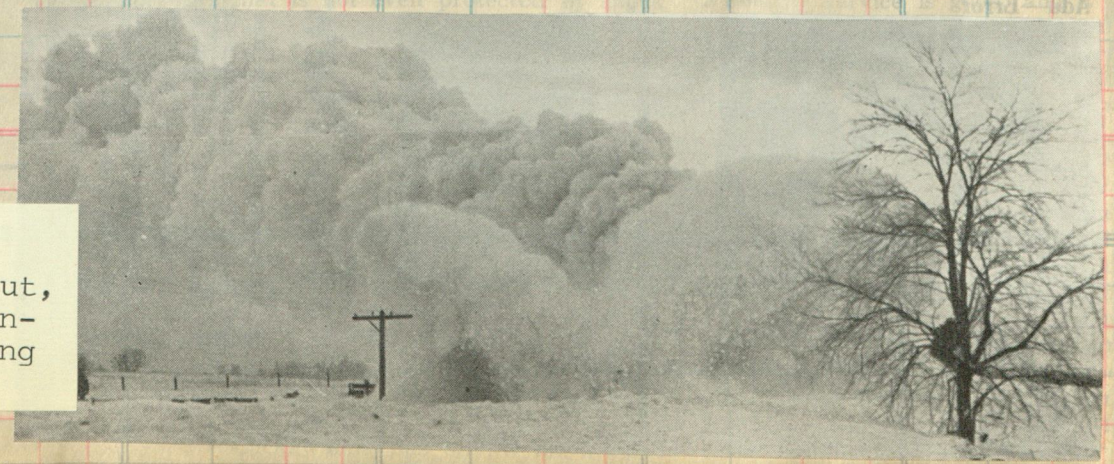
A Frozen Relief Train. Monarchs of the Rail Helpless in Winter's Frigid Grip.

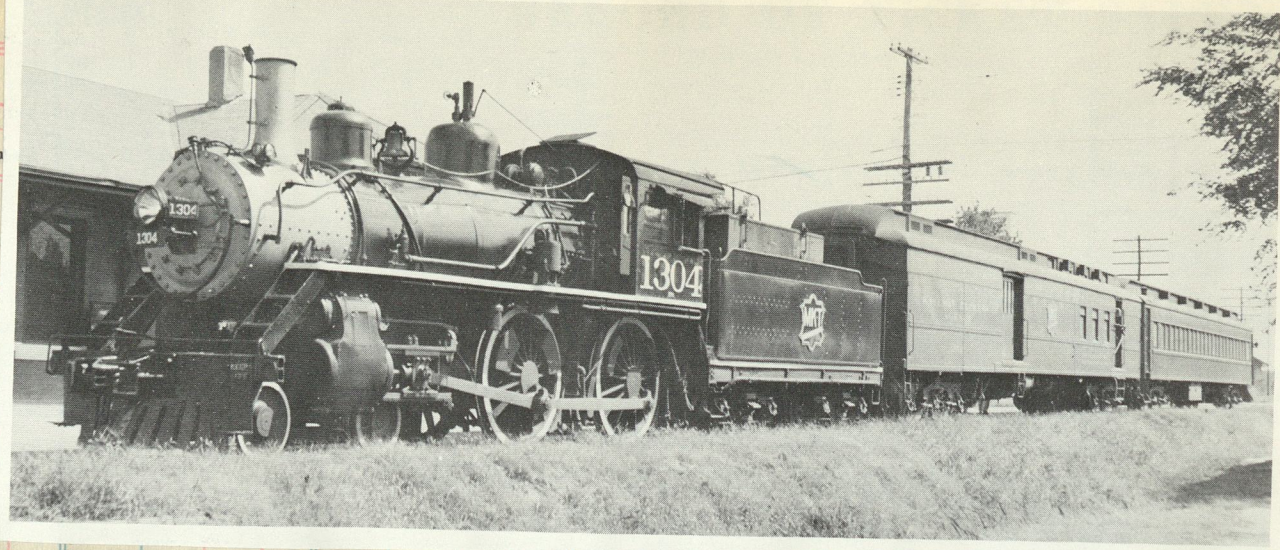
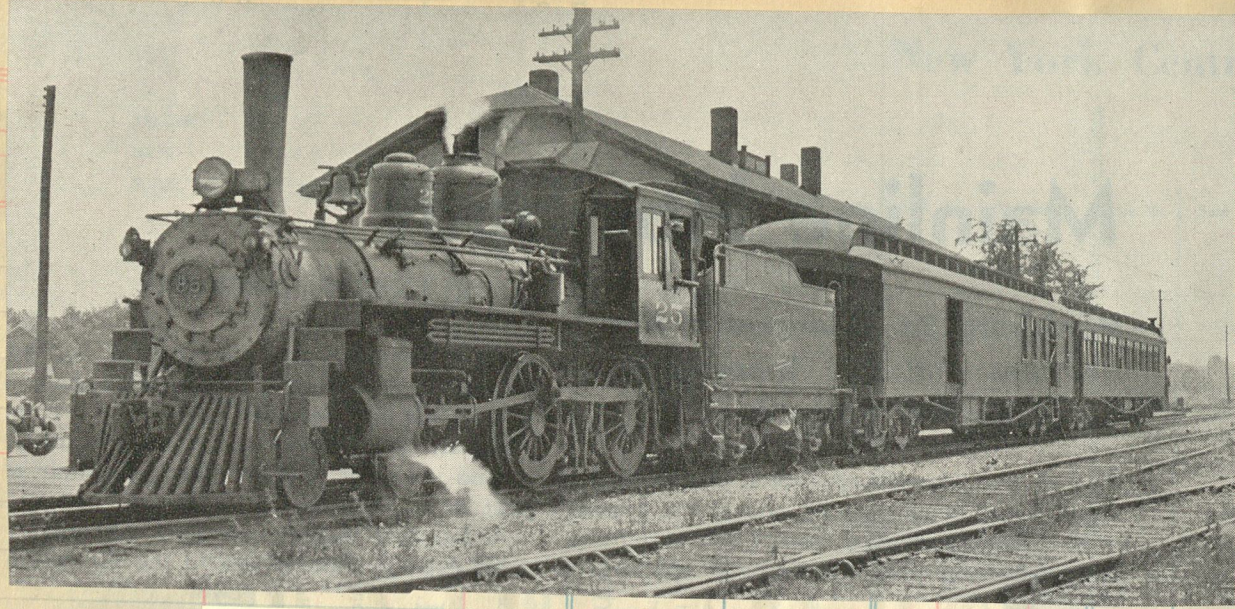


SNOWFALL at Steamboat Springs and Sidney, Colo., on the Denver & Salt Lake, 191 miles from Denver, in the winter of 1935-6, amounted to 18 feet. An east-bound extra was to meet No. 1 at Sidney. A boomer head brakeman located the passing track switch and, 50 feet farther on, began pawing around in the snow. A farmer nearby, also going through the same motions, asked: "What you looking for?" "Derail," answered the boomer. "What you looking for?" "My haystack," said the farmer.—M. L. Williams, Box 484, Craig, Colo.

A type of wedge plow used by the C&NW, Milwaukee, the Omaha and M&StL.

Bucking snow with a wedge plow made a magnificent spectacle, but, riding one sounded like being inside a boiler factory and scaring one half out of their wits!





The Local Train

By Alexander Hawkins

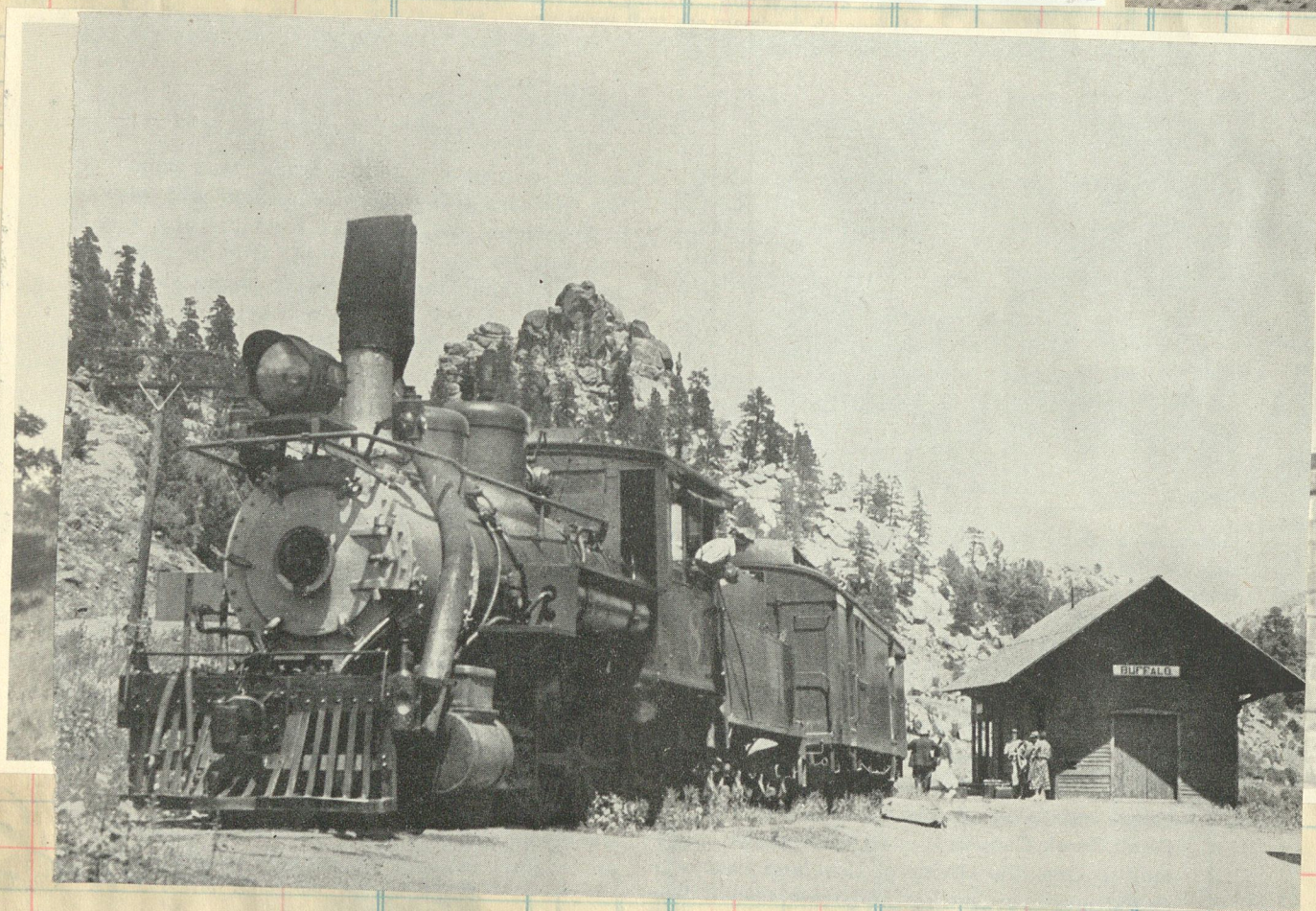
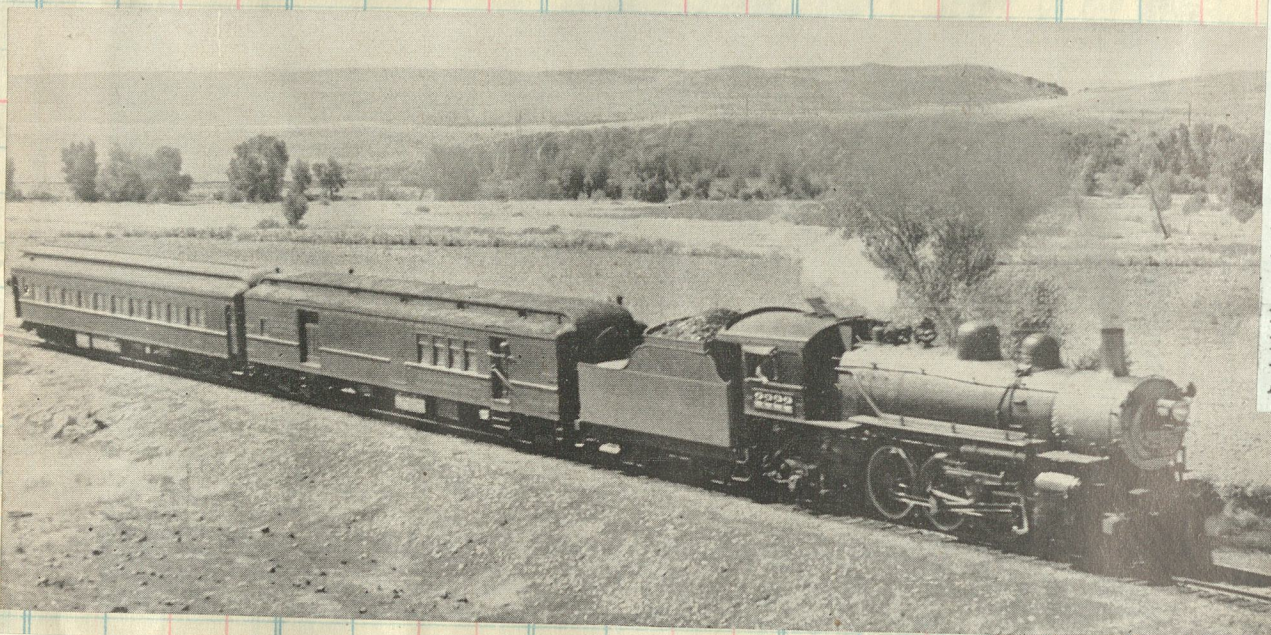
THE fast express comes on the run;
She will not stop for anyone.
She comes a-roaring, crashing down
And awaking up our little town.
And I go out to see her pass,
And wish that she would stop, alas,
So I could climb aboard and ride
And see how things look from inside.

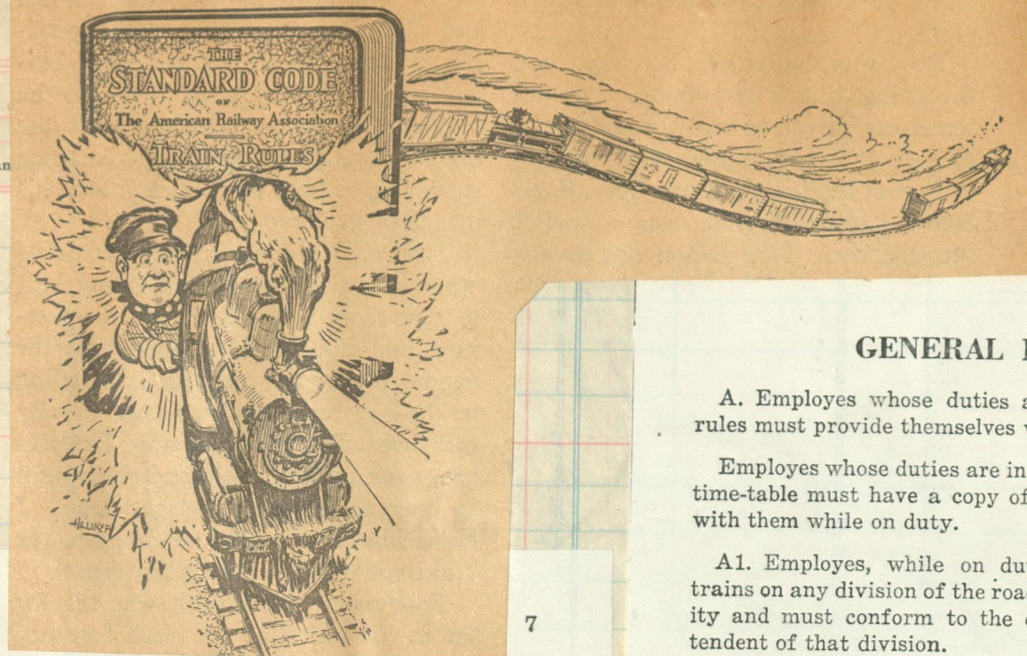
I catch a flying glimpse, and then
The fast express has gone again,—
A glimpse of something just begun:
Of brass rails gleaming in the sun,
Of plated window panes agleam
And lines of white escaping steam.
A flash, a racket, and a roar . . .
The fast express has passed once more!
Passed like a woman young and fair
With her nose stuck proudly in the air;
Passed with a lot of noise and fuss,
Too proud to notice such as us!

The local train comes down the grade
And pulls up, friendly, in the shade.
The engine wheezes, grins good cheer,
And seems to say, "Well, folks, I'm here!"
We had a nice run all the way
From the big city yesterday.
We've stopped at every store and town,
And joshed a while, a-comin' down.
We've done some business, more or less,
Some passengers and some express,—
A good day's work; and here we are,
An engine, coach and baggage car!"

And when the local leaves again,
I say, "If I should be a train,
I'd be a local train, I guess,
And not a haughty, fast express."

There was a day and time when hundreds of these little local trains served countless communities thru out the land. For decades they provided the small hamlets and out-of-the-way settlements with dependable transportation. They were the contact with the outside world; it brought them their mail, newspapers, express, staples and visiting Aunt Marie down from the big city. The wailing call of the local's whistle on a cold, stormy winter's day was the most comforting sound that could be heard. And its arrival was the social event of each day. Surely it was the little locals that held the country together!





GENERAL NOTICE

Safety is of the first importance in the discharge of duty.

Obedience to the rules is essential to safety.

To enter or remain in the service is an assurance of willingness to obey the rules.

The service demands the faithful, intelligent and courteous discharge of duty.

To obtain promotion, ability must be shown for greater responsibility.

The good will and friendship of the communities served by this railroad are its most valuable assets; and the strongest recommendation for promotion an employee can possibly have is the fact that by uniform courtesy and kindly accommodation of patrons he has secured for himself and for the railroad the good will and friendship of the community in which he is located.

GENERAL RULES

A. Employees whose duties are prescribed by these rules must provide themselves with a copy.

Employees whose duties are in any way affected by the time-table must have a copy of the current time-table with them while on duty.

A1. Employees, while on duty connected with the trains on any division of the road, are under the authority and must conform to the orders of the Superintendent of that division.

Unless otherwise provided, train employees are subject to the rules of the division or railroad on which they are running and all concerned must provide themselves with a copy of such rules and current time-table.

B. Employees must be conversant with and obey the rules and special instructions. Where rules are subdivided they apply equally to all and must be observed wherever they relate in any way to the proper discharge of the duties of employees. If in doubt as to their meaning they must apply to proper authority for an explanation.

Employees will be subject to discipline for any violation of the rules or special instructions or for any act of insubordination.

B1. Employees whose duties require it must be conversant with and obey the instructions issued by the several officials of the railroad relating to the business of their respective departments.

EXAMINATION COMPLETION NOTICE

☐ NEW MAN NY10-(Printed in U.S.A.) MU

DATE LEFT SERVICE

NAME *Joseph L. Mc Knight* DATE OF BIRTH *10/9/17*
DIVISION *Harlem* OCCUPATION *Ex Tel-Low*
CHANGE DIVISION TO CHANGE OCCUPATION TO

EXAMINATION TAKEN	RE-EXAMINATION DUE
☒ RULES	<i>10/18/1964</i>
☒ VISUAL AND HEARING	<i>10/18/1965</i>
☒ PHYSICAL	<i>10/19/1972</i>

RESULT OF RULES EXAMINATION
☒ SATISFACTORY ☐ UNSATISFACTORY

RESULT OF VISUAL AND HEARING EXAMINATION
WITHOUT GLASSES R 20/ *40* L 20/ *30*
WITH GLASSES R 20/ *20* L 20/ *20*
COLOR PERCEPTION ☒ SATISFACTORY ☐ UNSATISFACTORY
HEARING R *30* 20 L *20* 20

EMPLOYEE'S SIGNATURE *J. L. McKnight*
EXAMINER'S SIGNATURE *J. J. English* DATE *10/18/1963*

121
NEW YORK CENTRAL SYSTEM

RULES
OF THE
OPERATING DEPARTMENT

EFFECTIVE
OCTOBER 28, 1956

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3rd - Cotton Falls

The New York Central Railroad Company

HARLEM DIVISION

PUTNAM DIVISION

Time-Table No. 52

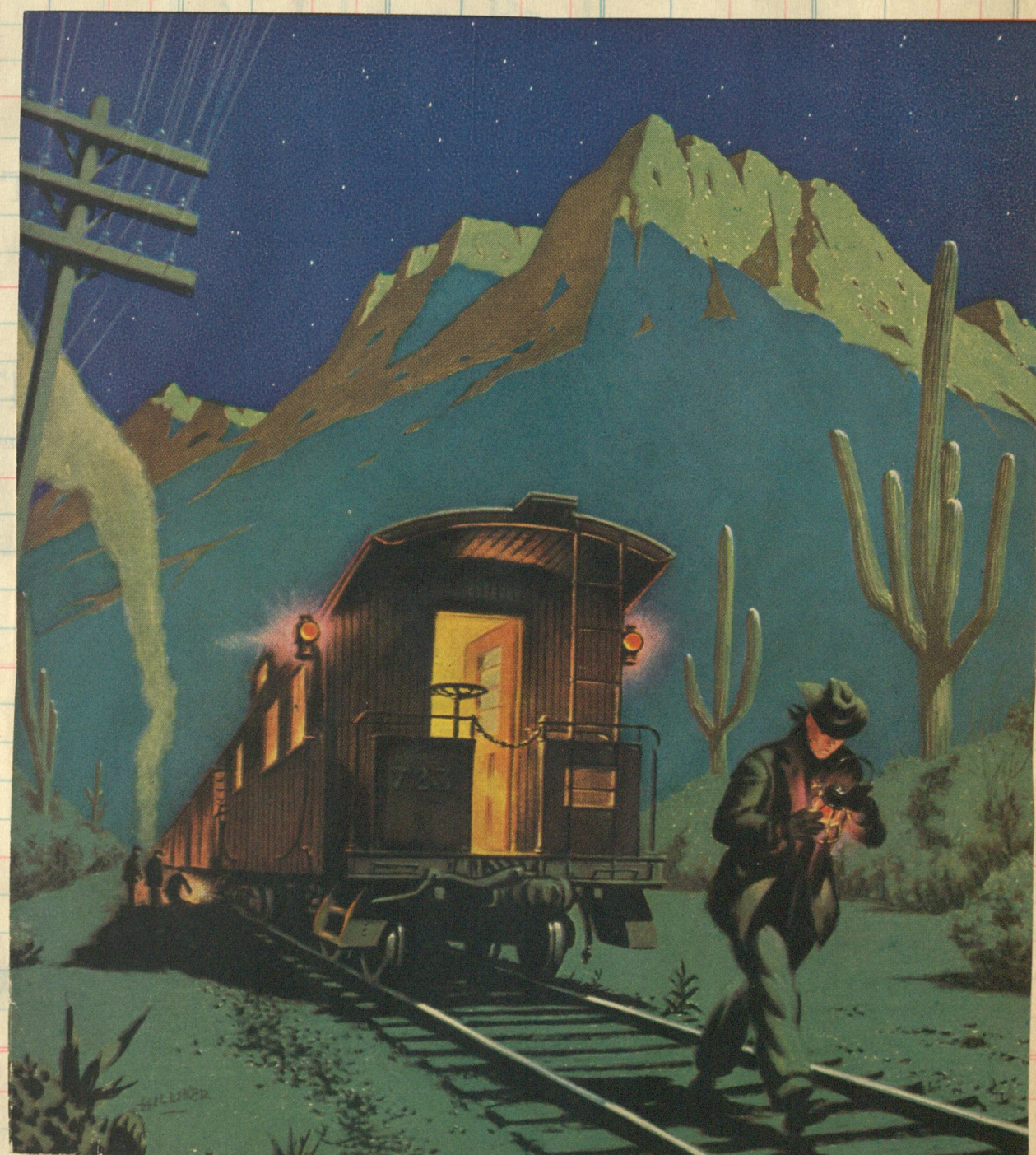
FOR EMPLOYEES ONLY

EFFECTIVE

2.00 A. M., Eastern Standard Time

Sunday, Sept. 29, 1940

M. E. WELCH,
Superintendent

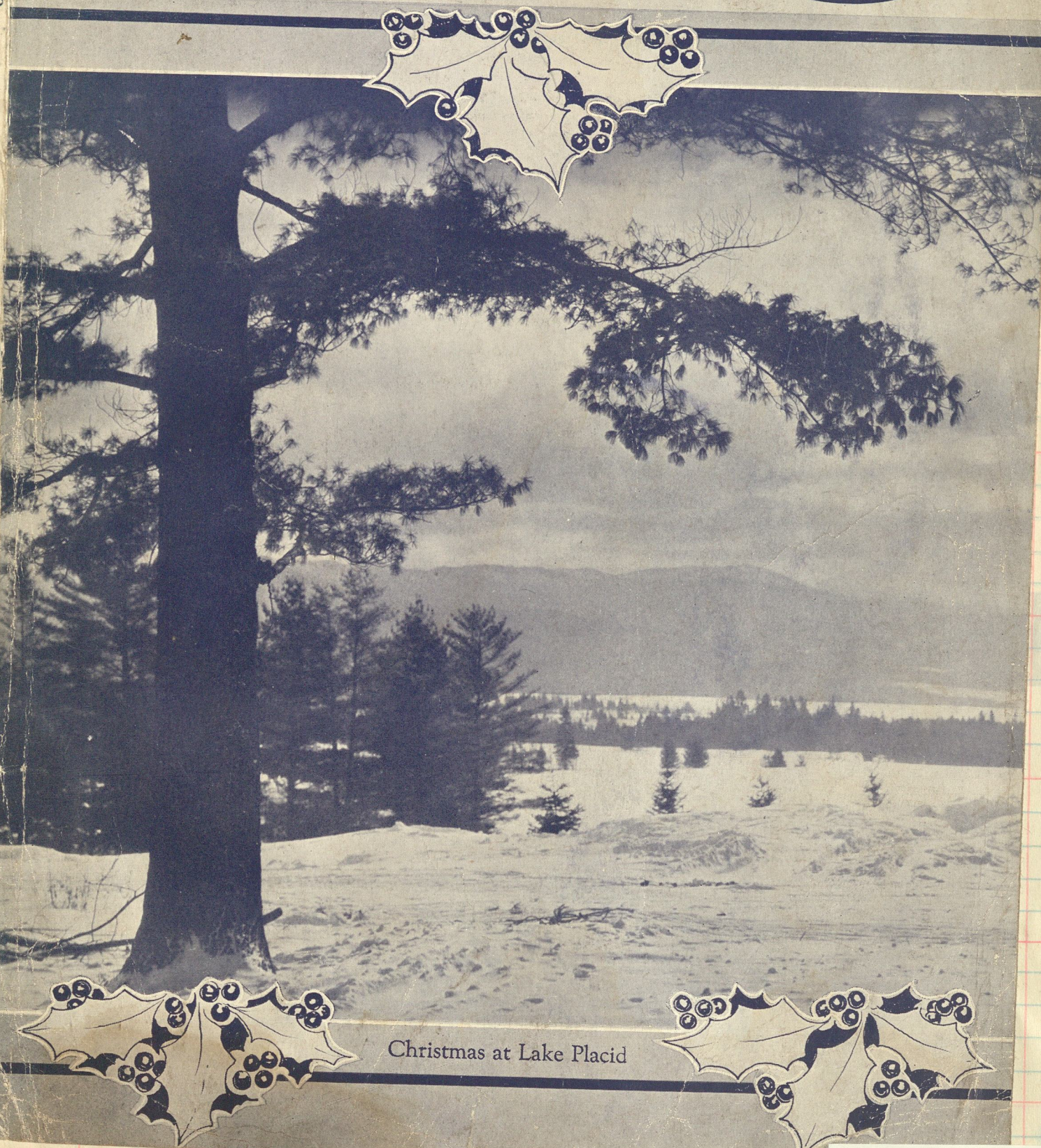


MOVEMENT OF TRAINS

41

99. When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection, placing two torpedoes, and when necessary, in addition, displaying lighted fuses. When recalled and safety to the train will permit, he may return.

When the conditions require, he will leave the torpedoes and a lighted fuse.

DECEMBER
1923NEW YORK
CENTRAL LINES
MAGAZINE

Christmas at Lake Placid

The New York Central Lines Magazine was published each month from 1919 to 1930 with a copy going to each of the 100,000 employees on the payroll. Most major roads issued a similar type magazine at one time or another.

329. What are some outstanding periodicals in the railway transportation field?

Official Guide of the Railways
Official Railway Equipment Register
Pocket List of Railroad Officials
Railroad Magazine
Railway Age
Railway Electrical Engineer
Railway Engineering and Maintenance
Railway Mechanical Engineer
Railway Purchases and Stores
Railway Signaling
Traffic World

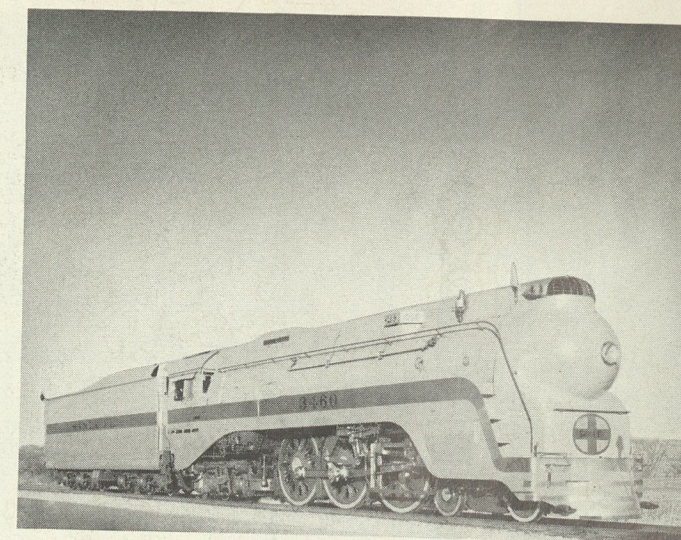
Waybills

Wholesale suspicion of railroad photography fans as fifth columnists seems to us rather silly. Most of us feel that any information to be obtained so openly has undoubtedly long been in the hands of any foreign government wanting it. However, the railroads are carrying materials which are vital to our national defense and they must take every precaution to see that nothing happens to these materials while in transit. This has been the reason in many cases for restricting access to railroad property. Railroad fans, realizing the present emergency, will, we are sure, cooperate and bear with any restrictions.

The Sacramento Northern story in the last TRAINS drew, as we expected, numerous protests from rabid steam fans. TRAINS is a railroad magazine and railroading includes electric as well as steam propulsion. TRAINS is covering without favoritism the entire field of railroad transportation. Street cars, of course, aren't railroading and won't be in TRAINS, but an electric line deriving a large part of its revenue from carload freight is certainly a railroad and deserves to be in TRAINS. Since electric operation is much less common than steam, it will receive proportionately less space, and we assure our readers that TRAINS, over a period of months, will never be lopsided in content.

TRAINS' editorial and business men consistently use railroad passenger service. And we help swell freight carloadings as well. Our paper comes by carload from the mill at Chillicothe, Ohio, via B&O and Milwaukee Road to our plant siding. Most outgoing magazines go railway mail, some Railway Express, and a few by freight.

A. C. K.



Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

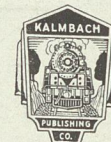
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Cover and masthead photos courtesy Santa Fe.



Published monthly by Kalmbach Publishing Co., 1568 W. Pierce St., Milwaukee, Wis., U.S.A.

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Title registered as a trade mark in U.S. Patent Office.

TRAINS 3 APRIL

LOCOMOTIVE ENGINEERS JOURNAL

PUBLISHED BY THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS
OFFICE: 404 N. WESLEY AVE., MOUNT MORRIS, ILL., AND B. OF L. E. BLDG., CLEVELAND, OHIO
PAUL M. SMITH, Editor and Manager

Volume 70

NOVEMBER, 1936

Number 11

GRAND CHIEF'S MESSAGE

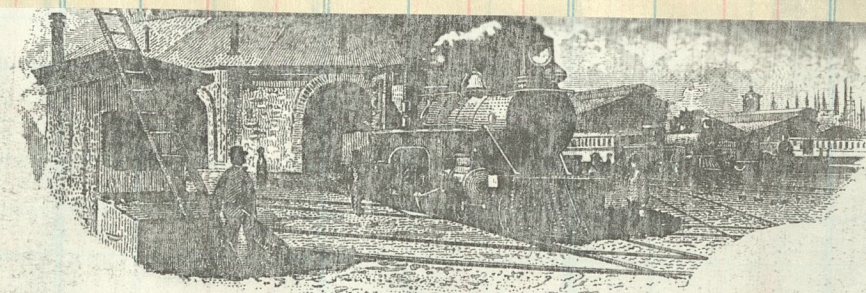
Power Reverse Gears

FROM time to time the membership have been advised with reference to the progress being made regarding hearings before the Interstate Commerce Commission on power reverse gear and stokers to be installed on locomotives.

Several meetings have been held recently and a tentative agreement has been reached. It is expected an agreement will be signed before the next issue of the JOURNAL.

eminent men: Dr. Walter H. Hamilton of Yale University, Dr. Luther W. Courtney of Baylor University and Colonel Frank Douglas of Oklahoma City. None of these men were in any manner identified with railroad business. This Board held hearings and their conclusions and recommendations were as follows:

- "1. The action of the carrier in putting a new schedule of rates of pay, rules, and working conditions into effect was not justified.
- "2. The new schedule of rules does not apply protect

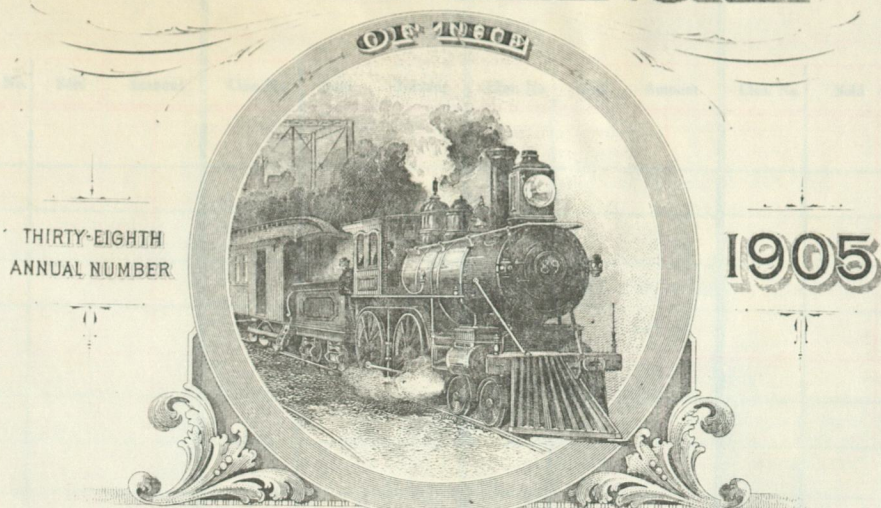
Railroad Magazine
Index for 1941

IN ANSWER to many requests, we print the following detailed, cross-reference index of fact material used in Railroad Magazine during the year 1941. This feature is mainly intended to serve readers who save their old copies and want to check back on elusive bits of information. We have also considered the needs of railroad men, students, historians, journalists and other researchers. Each item is followed by the month and page. Asterisks (*) indicate pictures.

ABANDONMENTS: listing of 1940; May 121-122; Dec. 85.
ADIRONDACK & ST. LAWRENCE: Jan. 77-78; May 141*.
AIR-CONDITIONING: Apr. 46; Dec. 127-128.
AKRON, CANTON & YOUNGSTOWN: Jan. 136, 137; Apr. 115; May 42; Sept. 133.
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ANNUAL SPEED SURVEY: Jan. 8*;
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ASHLEY PLANE: July 66.
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ATLANTA: July 92*;
ATLANTA & ST. ANDREWS BAY (Bay Line): Aug. 85.
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POOR'S MANUAL



THIRTY-EIGHTH
ANNUAL NUMBER

1905

RAILROADS OF THE UNITED STATES

Street Railway and Traction Companies, Industrial and Other
Corporations and statements of the debts of the United States,
the several States, Municipalities etc.

POOR'S RAILROAD MANUAL CO.

68 WILLIAM ST. NEW YORK.

EFFINGHAM WILSON, ROYAL EXCHANGE LONDON.

Illustration of a steam locomotive pulling a passenger train, framed by a circular border with the text 'OF THE' at the top and '1905' on the right.

Entered as second-class matter January 5, 1880, at the Post Office, at New York, under the Act of March 3, 1879.

**PUBLISHED
MONTHLY**

APRIL, 1939

**71st YEAR
No. 11**

THE OFFICIAL GUIDE

OF THE

RAILWAYS

AND

STEAM NAVIGATION LINES

OF THE

UNITED STATES

PORTO RICO

CANADA, MEXICO and CUBA

ALSO TIME-TABLES OF RAILROADS IN CENTRAL AMERICA

AIR-LINE SCHEDULES

COMPILED AND EDITED UNDER THE DIRECTION OF

A. J. BURNS, Manager

J. F. BURNS, Assistant Manager

THE NATIONAL RAILWAY PUBLICATION COMPANY, PUBLISHERS AND PROPRIETORS

424 West Thirty-Third Street, New York, N.Y.

A. J. BURNS President

JOHN S. ALLEN . . . Vice-President and Secretary

CHAS. D. BULLWINKEL Treasurer

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ST

Vol. XLII

FEBRUARY, 1927.

No. 9

123

THE OFFICIAL RAILWAY EQUIPMENT REGISTER

A Monthly Magazine devoted to the consideration of Topics of Interest to Shippers, Railroad Officials and Car Owners, more particularly Questions of Transportation Economics, Car Handling and other Subjects of Especial Importance in railway operation. Containing Official Information Descriptive of Equipment by Ownerships and Car Numbers, being the Medium through which Official Instructions are issued concerning the Rendering of Reports and the Settlement of Accounts pertaining to Car Service and Car Repairs, including Registration of Rolling Stock Equipment of the Railways and Car Companies of North America.

APPLICATION

To comply with the order of the Interstate Commerce Commission dated January 9, 1912, and confirm references in classifications and tariffs of rates, this publication applies in connection with the tariffs making reference thereto in the following particulars:

Each physical characteristic of the car used which affects or determines the amount of the charge to shipper or consignee, viz.:

UNDER THE TERM "DIMENSIONS": Inside length, width and height, in feet and inches (fractions of inches omitted); location and size of door openings.

UNDER THE TERM "CAPACITY": "Marked Capacity," (nominal capacity) or truck capacity as provided in standard operating and mechanical rules of the railways or an arbitrary selected from a safety standpoint within reasonable physical limit of the vehicle.

UNDER CUBICAL CAPACITY: Cubical capacity "Cubic feet level full" of all cars except flat cars and tank cars designed for carrying liquids; This detail (cubical capacity in feet) is shown for tank cars designed for carrying other than liquids.

UNDER "CAPACITY OF ICE TANKS": "Depth" and "cubic feet" capacity of ice bunkers in refrigerator cars, capacity of such bunkers in pounds of ice of the sizes usually furnished at icing stations known generally as "crushed" or "chunk" ice.

UNDER "MARKINGS AND KIND OF CARS" AND "NUMBERS": Ownership marks, class and type of car ("M. C. B. Designation" indicating physical characteristics in detail) car number, or if the number is one of a series built on one set of specifications the "number of cars" in the series under appropriate heading.

All other data appearing herein is published as information only and is not to be construed as in any way affecting charges as set forth in the Tariffs making reference hereto.

Issued by Authority of the Railroads of the United States, Canada and Mexico.

Resolution of the AMERICAN RAILWAY ASSOCIATION.

"That railway companies and other car owners be and are hereby requested to publish official information respecting their car equipment * * * * in the RAILWAY EQUIPMENT REGISTER, in order that a ready reference for authentic information on these subjects may be within reach of all railroad officials."

PUBLISHED MONTHLY BY

THE RAILWAY EQUIPMENT AND PUBLICATION COMPANY,

C. P. CONARD, President.

JOHN S. ALLEN, Secretary and Treasurer.

HAROLD A. BROWN,
Eastern Representative.

J. ALEXANDER BROWN, Vice-President and Manager.

N. R. MEADE, Assistant Manager.

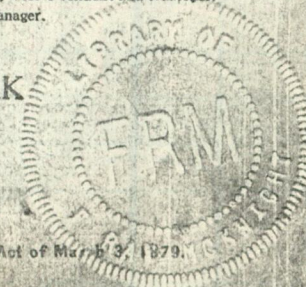
B. J. WILSON,
Western Representative.

424 WEST 33rd STREET (11th Floor), NEW YORK

SUBSCRIPTION PRICE

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Copyright 1927 by The Railway Equipment and Publication Co.



RAILWAY REVIEW

ESTABLISHED MAY-1868

Vol. 77

NOVEMBER 28, 1925

No. 22

Heavy Motive Power for Atlantic Coast Line

First Santa Fe Type Locomotives Used by Road
Placed in Service Recently in Alabama Territory

By W. W. BAXTER
Editor, Mechanical Department

THE Atlantic Coast Line R. R. has placed in operation recently 15 new locomotives of the Santa Fe, 2-10-2 type, built by the Baldwin Locomotive Works, which exceed in weight as well as in hauling capacity any other locomotives built previously for this road. The new engines, which are designated by the Atlantic Coast Line as the class Q-1, are being operated in the Montgomery, Ala., territory on grades of 1.65 per cent and curves of 12 degrees.

A comparison of this new power with the mikado

are set for a working pressure of 195 pounds. The firebox is of the radial stayed type, 132 3/8 inches long by 96 1/4 inches wide, with a grate area of 88.2 square feet. This is considerably larger than the fireboxes of the older mikado type engines as they had a grate area of only 73.5 square feet. The boilers are fitted with 50 5 1/2-inch superheater flues and with 256 2 1/4-inch tubes, having a length of 20 feet 6 inches. In accordance with Atlantic Coast Line standard practices, all seams in the firebox and combustion chamber

Just when the first timetables were published for free distribution to the public is not known. When the Stockton & Darlington (in England) operated its first trains a poster type notice was printed showing the arrival and departure times of the trains, this in 1825. In this country the initial railroads would publish a schedule in the newspapers. In the 1850's some roads began to issue a form of timetable to be passed out to travelers. By the 1880's they had developed into a several page pamphlet containing maps, advertisements, service of connecting roads, excursions etc in addition to detailed schedules of its own service. At the height of passenger service in mid 1920's, on some roads, this publication was in excess of sixty pages.

... The article on "Schedule Semantics" moves me to pass along the following item which I read and clipped over 30 years ago from *London Opinion*. Perhaps you will want to share it with TRAINS readers:

THE TRAVELER'S TROUBLES

When by train we decide to go,
A pleasant trip anticipating,
Alas, how little do we know
What troubles we're accumulating.

For instance, when we're striving hard
To reach some western station lonely,
How oft we find upon the card *

And if on Monday we should try
To catch the train with grim precision,
Upon the bill we're sure to spy †

Another train we struggle then
To find, and are informed with unction
That passengers to Cowslip Glen @

Or if instead we think we'll go
To Mudcombe Marsh ere summer's ended
This sign the table's sure to show ‡

Undaunted still we persevere
And settle on Hawthornley Dene
To find that passengers for here †

Through seas of figures then we wade,
And hieroglyphic signs unfeeling
To see, when next a choice is made ¶

Once more the direful sheet we scan,
Our travel prospects nearly flitted,
To meet another cheerless ban ▲

Enraged, our quest we still pursue
And from our course brook no deflection
Until this symbol comes in view □

And further down we note this sign,
Which worst of all that we can quote is §

* This train stops here on Mondays only.
† Runs only on the East Division.
‡ Must change at Muddle-Puddle Junction.
§ The Mudcombe service is suspended.
¶ Alight at Brambleborough Green.
▲ This train now only runs to Ealing.
□ No third-class passengers permitted.
§ This train no longer makes connection.
§ All trains are subject on this line to cancellation without notice.

Rev. Wm. C. Stearns.
Bridger-Belfry Parish, Box 296, Bridger, Mont.

Read this Page First— You'll Find that It Will Simplify the Reading of the Schedule Pages

See the Index — Table 2

Locate, alphabetically, your destination, then turn to the TABLE NUMBER given. You'll learn the time you leave, when you arrive at your destination and when you can return.

Read Down or Up

Start at the top of the page, and go down until you find the town you start from. Opposite are listed all the trains which stop there and their times of departure. If no time is shown, train does not stop. Then — depending on which direction your trip will be from the starting point — read down or up until you locate the name of your destination and read opposite it the time of arrival.

The time from 12:01 midnight to 12:00 o'clock noon is shown in light-faced figures, and from 12:01 noon to 12:00 o'clock midnight in dark-faced figures. (E.T.) denotes Eastern Time, (C.T.) Central Time, (M.T.) Mountain Time and (P.T.) Pacific Time.

Check References

Below every table, you'll find an explanation of the Reference Marks used. For instance, "f" means stop on signal ("flag") to take on or let off passengers. Other marks explain special stops, meal stops and other things of interest to the traveler.

We believe if you'll read through this page and follow these suggestions you'll discover that reading a railroad timetable is not as difficult as many think it is. You'll find most of the answers right here in this folder, but if they are not, just call or write the nearest Frisco Traffic Representative listed in Table 47.

What is the Fare?

In Table 40 are listed the fares between principal points. While all points are not listed, you can figure approximately what your trip will cost. Rail and sleeping car fares are shown separately.

Other Tips

In Tables 3, 4, 5 and 6 you'll find complete descriptions of the accommodations available on the various Frisco trains; also condensed schedules.

Table 1 shows Optional Route arrangements, and Tables 41, 42, 43, 44, 45 and 46 show time of connecting trains of other railroads between St. Louis, Kansas City, Memphis, Birmingham, Dallas and Fort Worth and principal cities on those railroads.

RECORD OF TICKET SALES AT

APRIL, 1899.

THE COLORADO ROAD

COLORADO AND SOUTHERN RY.

FRANK TRUMBULL
PRESIDENT AND GENERAL MANAGER
T. F. DUNAWAY
GENERAL SUPERINTENDENT
DENVER, COLORADO

B. L. WINCHELL
VICE-PRESIDENT AND TRAFFIC MANAGER
T. E. FISHER
GENERAL PASSENGER AGENT
DENVER, COLORADO

SMITH BROOKS CO. DENVER.

APRIL, 1899.

THE COLORADO ROAD

COLORADO AND SOUTHERN RY.

FRANK TRUMBULL
PRESIDENT AND GENERAL MANAGER
T. F. DUNAWAY
GENERAL SUPERINTENDENT
DENVER, COLORADO

B. L. WINCHELL
VICE-PRESIDENT AND TRAFFIC MANAGER
T. E. FISHER
GENERAL PASSENGER AGENT
DENVER, COLORADO

SMITH BROOKS CO. DENVER.

NORTH SHORE AND MILWAUKEE RAILWAY COMPANY

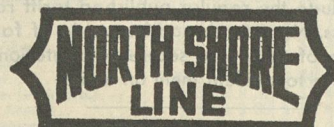
Schedule of Trains

Timetable G-54
JUNE 5, 1949

Frequent — Convenient
ALL ELECTRIC

CHICAGO LOOP
DOWNTOWN MILWAUKEE

Waukegan Kenosha
Zion Racine
Skokie Valley Communities
North Shore Suburbs



"the route of the Electroliners"

NORTH SHORE AND MILWAUKEE RAILWAY COMPANY

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"the route of the Electroliners"

The Time shown in this folder is EASTERN STANDARD TIME, one hour slower than DAY-LIGHT SAVING TIME

ADIRONDACK DIVISION

SUBURBAN SERVICE — SERVICE SUBURBAIN

Corrected to June 27th, 1926—Corrigé le 27 Juin 1926

L'heure indiquée dans cet horaire est l'heure OFFICIELLE de L'EST, laquelle est une heure en retard sur celle du système de l'ÉCONOMIE DE LA LUMIÈRE.

TRAINS ARRIVE AT AND DEPART FROM WINDSOR STREET STATION, MONTREAL.
L'ARRIVÉE ET LE DÉPART DES TRAINS S'EFFECTUENT À LA GARE WINDSOR, MONTREAL.

Miles from Montreal	STATIONS	SOUTHBOUND — VERS LE SUD								NORTHBOUND — VERS LE NORD							
		Daily Ex-Sun Quot. ex Dim	Sun. only Dim. Seul.	Sat. only Sam. secul.	Daily ex-Sun Quot. ex Dim	Daily ex-Sun Quot. ex Dim	Daily ex-Sun Quot. ex Dim	Daily ex-Sun Quot. ex Dim	Sat. & Sun. Sam. & Dim. Seul.	Daily Ex-Sun Quot. ex Dim	Daily Ex-Sun Quot. ex Dim	Daily Ex-Sun Quot. ex Dim	Daily Ex-Sun Quot. ex Dim	Daily Ex-Sun Quot. ex Dim	Sun. only Dim. Seul.	Sat. only Sam. secul.	Daily ex-Sun Quot. ex Dim
0	Lv. MONTREAL	8 00	8 45	12 01	12 35	PM	PM	PM	PM	8 00	8 45	12 01	12 35	PM	PM	PM	PM
1	" Westmount	8 06	8 51	12 06	12 41	PM	PM	PM	PM	8 06	8 51	12 06	12 41	PM	PM	PM	PM
2	" Montreal West	8 12	8 57	12 12	12 47	PM	PM	PM	PM	8 12	8 57	12 12	12 47	PM	PM	PM	PM
3	" Highlands	8 20	9 05	12 20	12 55	PM	PM	PM	PM	8 20	9 05	12 20	12 55	PM	PM	PM	PM
4	" Adirondack Jct.	8 25	9 10	12 25	1 00	PM	PM	PM	PM	8 25	9 10	12 25	1 00	PM	PM	PM	PM
5	" Kanawaki	8 28	9 13	12 28	1 03	PM	PM	PM	PM	8 28	9 13	12 28	1 03	PM	PM	PM	PM
6	" The Heights	8 35	9 21	12 38	1 11	PM	PM	PM	PM	8 35	9 21	12 38	1 11	PM	PM	PM	PM
7	" Chateauguay	8 38	9 24	12 41	1 13	PM	PM	PM	PM	8 38	9 24	12 41	1 13	PM	PM	PM	PM
8	" Woodlands	8 43	9 24	12 46	1 18	PM	PM	PM	PM	8 43	9 24	12 46	1 18	PM	PM	PM	PM
9	" Bellevue	8 47	9 28	12 51	1 23	PM	PM	PM	PM	8 47	9 28	12 51	1 23	PM	PM	PM	PM
10	" Maple Grove	8 51	9 32	12 55	1 27	PM	PM	PM	PM	8 51	9 32	12 55	1 27	PM	PM	PM	PM
11	" Beauharnois	8 55	9 36	1 01	1 32	PM	PM	PM	PM	8 55	9 36	1 01	1 32	PM	PM	PM	PM
12	" Melocheville	9 01	10 03	1 08	1 39	PM	PM	PM	PM	9 01	10 03	1 08	1 39	PM	PM	PM	PM
13	" St. Timothee	9 13	10 18	1 17	1 48	PM	PM	PM	PM	9 13	10 18	1 17	1 48	PM	PM	PM	PM
14	" Valleyfield	9 27	10 30	1 30	2 00	PM	PM	PM	PM	9 27	10 30	1 30	2 00	PM	PM	PM	PM
15	" St. Stanislas	9 36	10 39			PM	PM	PM	PM	9 36	10 39			PM	PM	PM	PM
16	" New Erin	9 40	10 43			PM	PM	PM	PM	9 40	10 43			PM	PM	PM	PM
17	" Huntingdon	9 48	10 52			PM	PM	PM	PM	9 48	10 52			PM	PM	PM	PM
18	" Athelstan	9 55	11 00			PM	PM	PM	PM	9 55	11 00			PM	PM	PM	PM
19	" Constable	10 10	11 17			PM	PM	PM	PM	10 10	11 17			PM	PM	PM	PM
20	Ar. MALONE	10 20	11 30			PM	PM	PM	PM	10 20	11 30			PM	PM	PM	PM

Reference Marks and Notes

Light face figures denote A.M. time; Dark face figures P.M. time.
f Trains stop on signal to land or receive passengers.
h Stop to pick up passengers for south of Adirondack Jct. only.
i Stop to land passengers from south of Adirondack Jct. only.
k Runs Saturdays only.
+ Runs daily except Saturdays and Sundays.
* Stops on signal Sundays only.
a Stops on signal daily to land passengers from Malone and Stations South. Stops on signal Sunday only to pick up passengers for stations north.
z Stops Saturdays only.

Dining Car Service

Char-Restaurant

Train No. 5

Malone-Valleyfield

Train No. 2

Valleyfield-Malone

Marques et Notes Explicatives.

Les chiffres légers indiquent A.M.; les chiffres noirs P.M.
f Trains arrêtant au signal, pour faire descendre et laisser monter les passagers.
h Arrêtant pour laisser monter les passagers pour le Sud de la Jonction Adirondack seulement.
i Arrêtant pour laisser descendre les passagers venant du Sud de la Jonction Adirondack seulement.
+ Circule le samedi seulement.
* Circule tous les jours excepté les Samedis et Dimanches.
a Arrêtant sur signal tous les jours pour laisser descendre les passagers venant de Malone et stations Sud. Arrêtant les dimanches seulement sur signal pour laisser monter les passagers pour les stations nord.
z Arrêtant les Samedis seulement.

A bilingual [French and English] timetable of service on the New York Central's StLawrence & Adirondack branch between Malone, N.Y. and Montreal, P.Q.

(No. 736. Page 88).

NEWCASTLE AND FRENCHTOWN

RAIL-ROAD.

PASSENGER CARS,

PROPELLED BY A LOCOMOTIVE ENGINE.
Leaves the Depot, at NEWCASTLE, for FRENCHTOWN.

EVERY MORNING.

Upon the arrival of the Steam-boat from Philadelphia, at about

Half Past Eight o'clock,

RETURNING

Leaves Frenchtown at about Half-Past Ten o'clock.

ANOTHER TRAIN OF PASSENGER CARS

Departs from New Castle, for Frenchtown, every evening, (except Sunday,) upon the arrival of the AFTERNOON BOAT, from Philadelphia, at about Six o'clock, and on return arrives about Nine o'clock.

Fare over the Road 50 cents.
Do., for excursion over the road and back 50 cents.

R. H. BARR, JR.

New Castle & Frenchtown Railroad Poster Issued in 1833.

DENVER & RIO GRANDE WESTERN RAILROAD

THRU THE ROCKIES — NOT AROUND THEM

DO YOU KNOW

THAT the Royal Gorge Route, via the Hanging Bridge, goes **over** the Continental Divide at Tennessee Pass. That the Moffat Tunnel Route, via the Dotsero Cut-off, goes **under** the Continental Divide thru the Moffat Tunnel.

THAT at Glenwood Springs, winter and summer, you may bathe in the famous open-air hot mineral water pool.

THAT there is skiing, tobogganing, and ice skating in Denver Mountain Parks, in the Pikes Peak region, on the slopes of Marshall Pass near Salida, Colo., in the Glenwood Springs and Aspen region, and at numerous spots in the Wasatch Range near Salt Lake City, Utah.

THAT the sun shines along the route of the Rio Grande every day in the year. That the average winter temperature at Denver and Salt Lake City for a period of 62 years, has been **above** freezing.

THAT for more than a third of a century, there has been no snow blockade on the main line of the Denver & Rio Grande Western. That trains via the Moffat Tunnel have never been delayed by snow.

THAT air-conditioned coaches, diners and lounge-observation cars are always clean, comfortable and healthful—cool in summer, warm in winter.

THAT economy meals are served piping hot at seats in coaches and tourist Pullmans—breakfast 25c, lunch 30c, dinner 35c.

THAT the best food in the world is served table d'hôte or a la carte at moderate prices in Rio Grande diners.

THAT passengers have free use of fresh, downy pillows every night in Rio Grande coaches, where lights are dimmed.

THAT any railroad agent anywhere can route you Rio Grande at the lowest fares in years.

THAT daily thru Pullman service is available between Chicago, St. Louis and San Francisco via both routes.

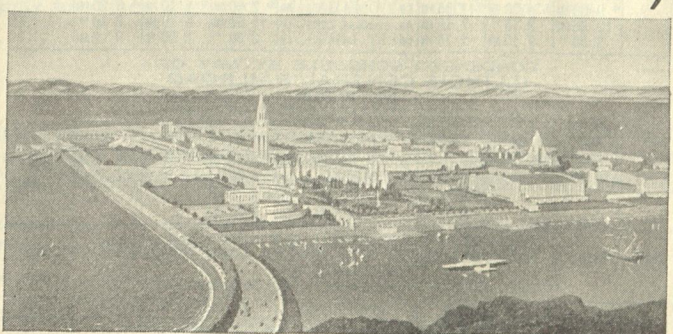
THAT travel by the Rio Grande is comfortable, speedy, and—unlike other forms of transportation—as safe in winter as in summer.

For information, reservations, tickets, ask any ticket agent or inquire of

H. I. SCOFIELD
Passenger Traffic Manager
Denver, Colorado.

1939 WORLD'S FAIR

on San Francisco Bay



Pageant of the Pacific on Treasure Island

Next year see all the West and the Golden Gate International Exposition on San Francisco Bay. Here, on mile-square Treasure Island, the nations of the Pacific and the Western States will display their wonders in a great Pageant of the Pacific through 1939. Keynote of a gala year, America's World's Fair on the Pacific will be the theme for celebrations throughout the West . . . Fiesta Year in the West. Plan now to come.

FEBRUARY 18 TO DECEMBER 2

TWO GRANDE SCENIC ROUTES . . .
• The World-Famed Royal Gorge
• The Moffat Tunnel Scenic Shortcut
GO ONE WAY • RETURN THE OTHER

1939 GOLDEN GATE INTERNATIONAL EXPOSITION

1941

Through Car Service—North and Eastbound

Air-Conditioned Coaches on all trains except as otherwise noted.

★Regularly assigned cars AIR-CONDITIONED

No. 2—The Owl—Daily.
Bedroom Cars *New York to Boston. (Single Rooms.)
Sleeping Cars *New York to Boston (Sec. and D. R.).
*New York to Boston (Sec. and Comp.).
*New York to Providence (Saturday nights only).

Reclining Seat Coaches *New York to Boston (Saturday nights only). (Open for occupancy at 10 00 P.M. and may be occupied until 7 30 A.M.)

No. 4—The Narragansett—Daily except Sundays
Bedroom Cars *New York to Providence. (Single rooms.)
Sleeping Cars *New York to Providence.
*New York to Boston.

Reclining Seat Coaches *New York to Boston (open for occupancy at 10 00 P.M. and may be occupied until 7 30 A.M.).

No. 6—The Bunker Hill—Daily except Sundays.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Grill Car *New York to Boston.

No. 8—The Mayflower—Daily.
Parlor Car *New York to Boston.
Grill Car *New York to Boston.

No. 10—The Bay State—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 14—The Bostonian—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 20—The Puritan—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 22—Yankee Clipper—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 24—The Shoreliner—Daily except Sundays.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 26—MERCHANTS LIMITED—Extra Fare Train.
Daily except Saturdays.
Train Telephone Murray Hill 9-3600. (30 minutes before departure).
Club Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.
Sun Parlor Observation Car *New York to Boston.

No. 28—The Gift Edge—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 30—The Advance Gift Edge—Fridays only.
Parlor-Lounge Car *New York to Boston.
Dining Car *New York to Boston.

No. 50—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.
Sundays (Broiler Buffet). (B. & M. train 77 from Springfield).
Grill Car *New York to Boston.
Dining Car *New York to Boston.
Coaches *New York to Boston.

No. 52—Saturday nights only.
Sleeping Cars *New York to White River Jct. (B. & M. train 7051 from Springfield).
*New York to Worcester.

No. 54—Daily.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.
Coaches *New York to Boston.
*New York to White River Jct. Saturdays only. (to B. & M. train 717).

No. 56—Daily except Saturdays.
Sleeping Cars *New York to Springfield.
*New York to White River Jct. (to B. & M. train 7051 from Springfield).
*New York to Boston.

No. 58—Daily except Sundays.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.
Coaches *New York to Boston.

No. 66—Daily.
Grill Car *New York to Springfield.
Parlor Car *New York to Springfield.
Parlor-Lounge Car *New York to Boston.
Dining Car *New York to Boston.

No. 72—Daily except Sundays.
Parlor Car *New York to Springfield.

No. 74—Sundays only.
Parlor-Lounge Car *New York to Boston.
Parlor Car *New York to Boston.
Dining Car *New York to Boston.

No. 76—Sundays only.
Parlor Car *New York to Springfield. (Broiler Buffet).

No. 78—Daily except Sundays.
Parlor Car *New York to Springfield.
Dining Car *New York to New Haven.

No. 80—Daily except Sundays.
Parlor-Lounge Car *New York to Springfield.
Parlor Car *New York to Springfield.
Dining Car *New York to Springfield. (Fridays only. (B. & M. train 709 from Springfield).

No. 82—Sundays only.
Parlor-Lounge Car *New York to Springfield.
Parlor Car *New York to Springfield.
Dining Car *New York to Springfield.
Coaches *New York to Springfield.
*New York to White River Jct. (B. & M. train 709 from Springfield).

No. 86—Daily.
Parlor Car *New York to Springfield.
Dining Car *New York to Hartford.

No. 88—Sundays only.
Parlor Car *New York to Springfield.

No. 90—Daily except Sundays.
Parlor Car *New York to Springfield.

No. 124—The State of Maine Express.
Daily except Saturdays.
Lounge Car *New York to Portland (Buffet) (B. & M. train 81 from Worcester).
Sleeping Cars *New York to Concord.
*New York to Portland (Sec. and D. R.).
*New York to Portland (D. R. & Comp.).
Reclining Seat Coach *New York, G. C. T. to Portland. (Between all points).

No. 126—The State of Maine Express.
Saturdays only.
Lounge Car *New York to Portland (Buffet) (B. & M. train 81 from Worcester).
Sleeping Cars *New York to Portland (Sec. and D. R.).
*New York to Portland (D. R. & Comp.).
Reclining Seat Coach *New York, G. C. T. to Portland.

No. 142—Sundays only.
Parlor-Lounge Car *New York to Pittsfield.
Dining Car *New York to Pittsfield.

No. 144—The Berkshire Express.
Daily except Sundays.
Parlor Car *New York to Pittsfield. (Broiler Buffet).

No. 168—The Montrealer—Daily.
Lounge Car *Washington to Montreal (Buffet-Comp.).
Sleeping Cars *Washington to Montreal.
*New York, Penna. Sta. to Montreal (8 Sec. 5 double bed rooms).
*New York, Penna. Sta. to St. Albans.
Parlor Car *Washington to Springfield.
*Washington to New York.
Meal Service *St. Albans to Montreal.
Through Coaches *Washington to Montreal.

★Regularly assigned cars AIR-CONDITIONED.

Food will not be served from Club, Lounge or Buffet Car while Dining or Grill Car is attached.

SLEEPING CAR OCCUPANCY

Cars Are Ready

At New Haven 10 15 PM
New York, Grand Central Terminal 10 00 PM
New York, Pennsylvania Station (Note A) 10 30 PM

Must Be Vacated

At Boston, South Station 8 30 AM
New Haven (Note B) 6 30 AM
Portland 8 00 AM
Providence 8 30 AM
Springfield (Note C) 8 30 AM
Worcester 8 30 AM

NOTE A: During Christmas and New Year's holiday periods, operating conditions may necessitate placing cars for occupancy later than 10 30 P. M.
NOTE B: This applies only to cars enroute from Washington and Pittsburgh to Springfield.
NOTE C: Cars enroute to points North of Springfield must be vacated by 6 45 A.M.

When regular trains are operated in two sections, the Coach section will not have a Dining Car.

2-19-41

Use The New Haven R. R. in Selling or Distributing Your Product

L. O. No. 3624 COST \$11,700.00 ENGINE No. 699 Jane 1 81

BUILDER Schenley SHOP Schenley DATE BUILT 2.1898 BUILDER'S No. 4700 TYPE H-3 CLASS H-3

NO. 69 INITIAL 2629 NEW No. 629 DATE 12/11/1911 PLACE 2629 N. 303629-55 Ave

CYLINDERS 20 STROKE 26 VALVE 3/4" WHEEL CTRS. 144" TIRES 32" x 26" ENGINE TRUCK 33" x 3500 8 TRAILER TRUCK 30" x 4000 9 TENDER

CHANGED AT DATE 12/11/1911

WHEEL BASE OF ENGINE 24' 11" TENDER 15' 0" TOTAL 50' 8" RIGID 14' 11" HEATING SURFACE TOTAL 2118.50 SQ. FT. TOTAL LENGTH ENGINE & TENDER 58' 4"

WT. ON DRIVERS 118,000 WT. ON ENG. TRUCK 25,000 WT. ON TRAILER 11,000 WT. OF TENDER FULL 86,000

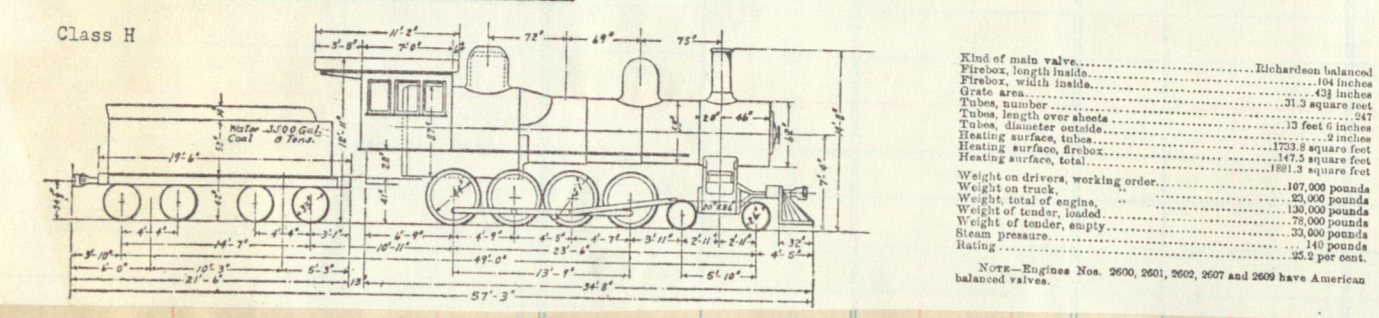
Nov. 1911

Handwritten: "Demolished at West Albany Feb 15 1916"

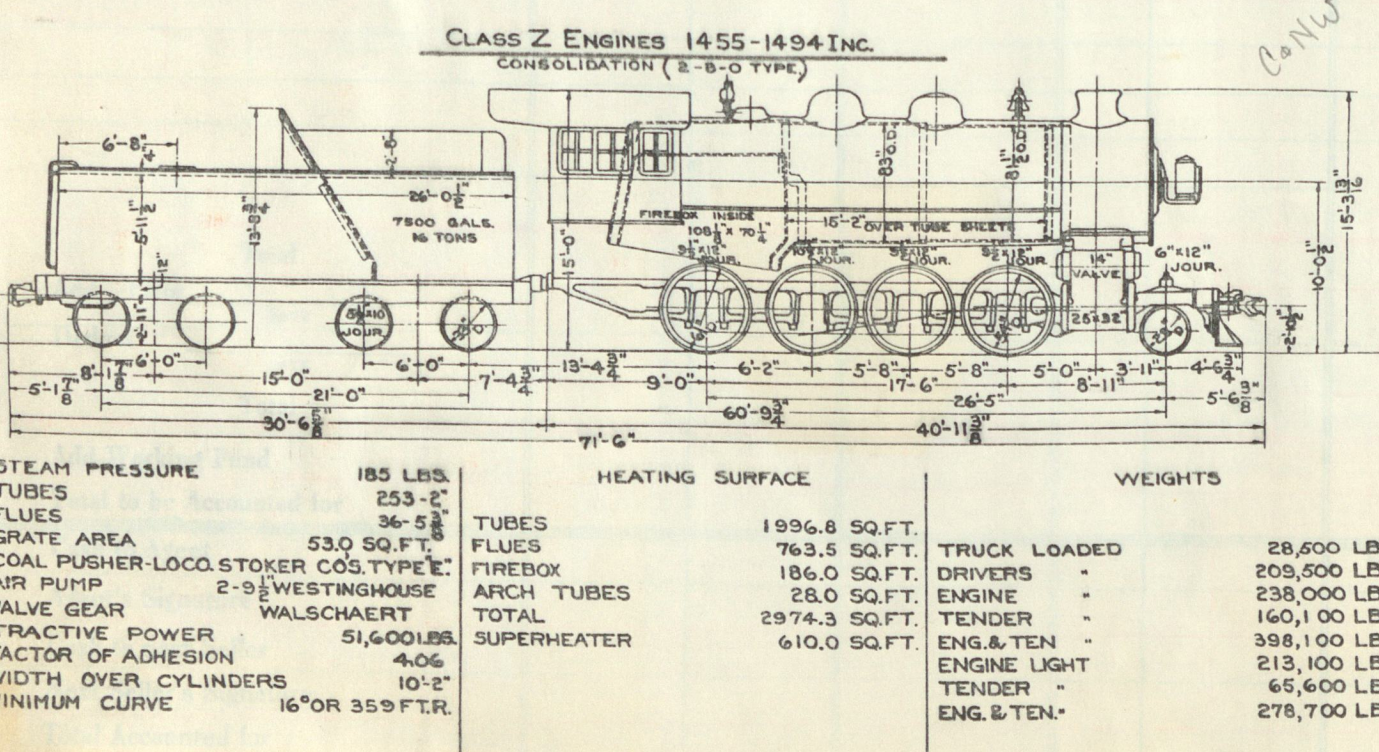
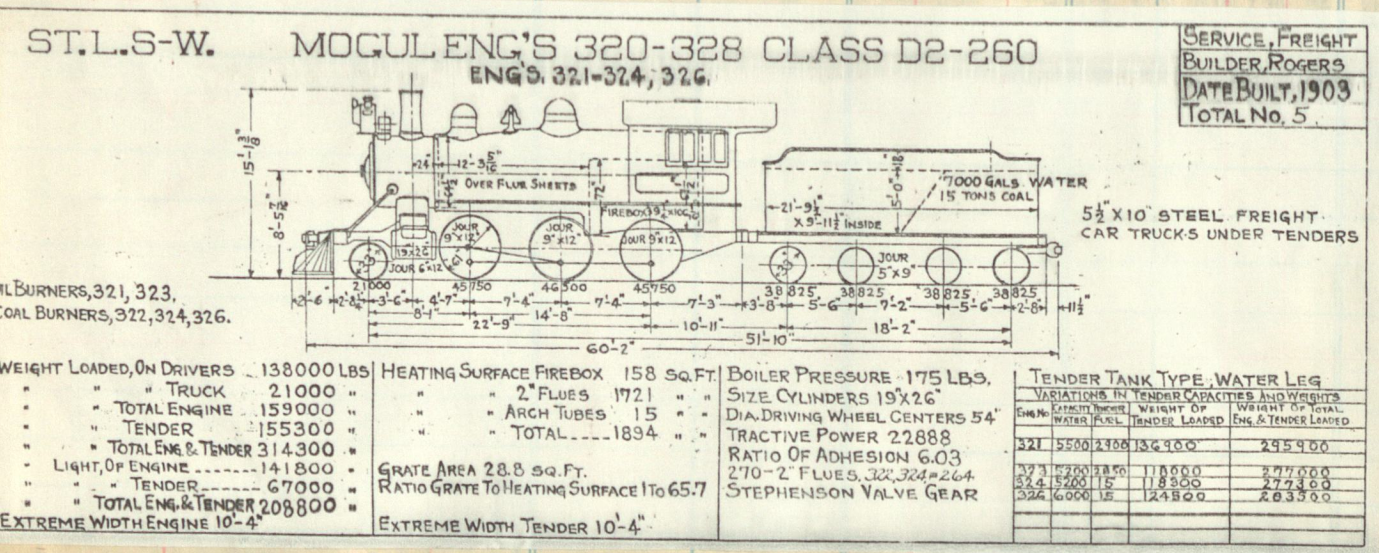
Handwritten: "Class Changed by R. R. Keudigs Letter 5 H. 9/12/13"

Handwritten: "Mr. P. E. Cronin 164 Dec 1911 47-144 That 11.1.1. be copied to a Road Eng."

CLASS H 4-8-0: 20x26-51-140-130000-135700-25200 (Some later class X)



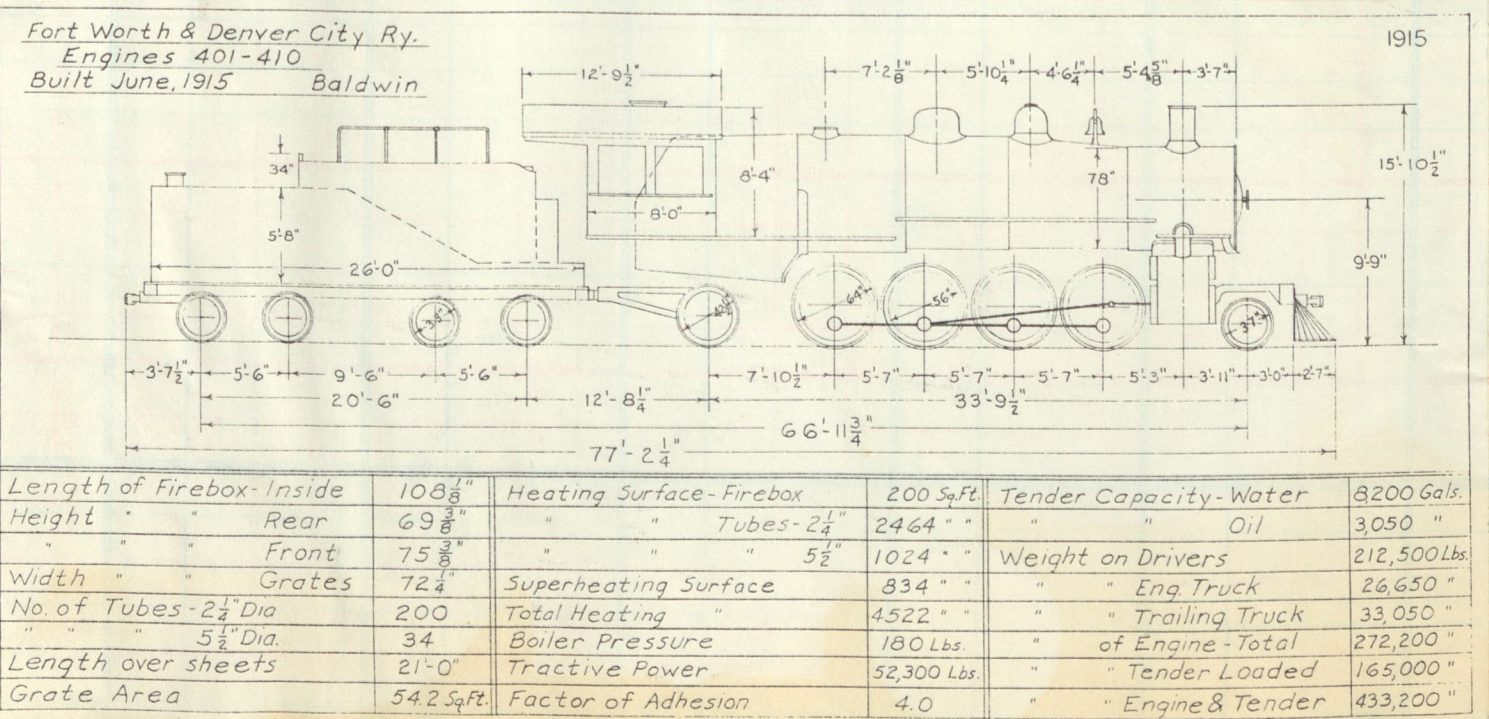
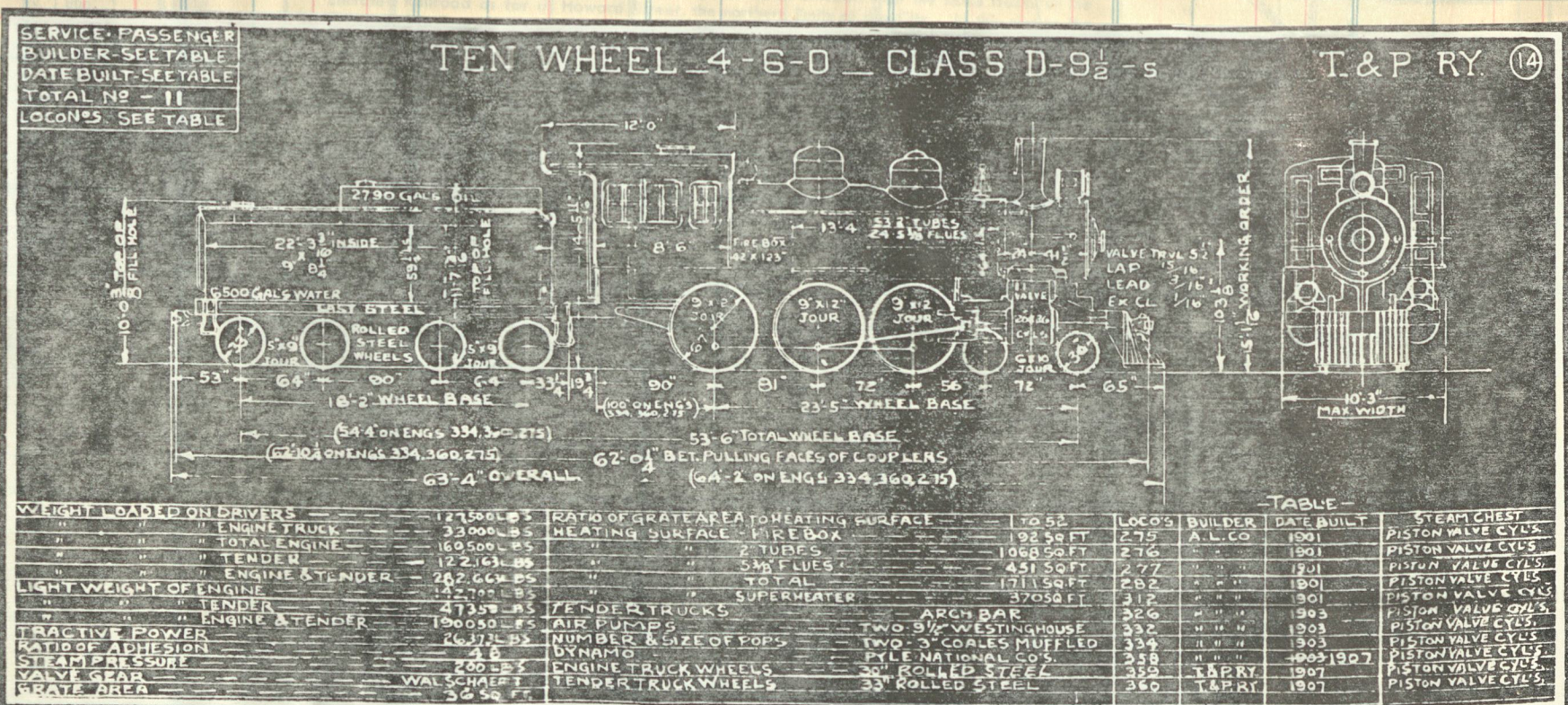
All the major roads issued Diagram Books of its motive power showing all the important data on each class of engine on the roster.



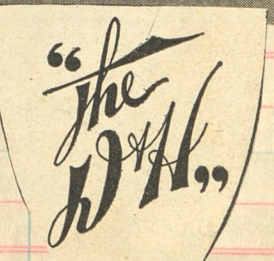
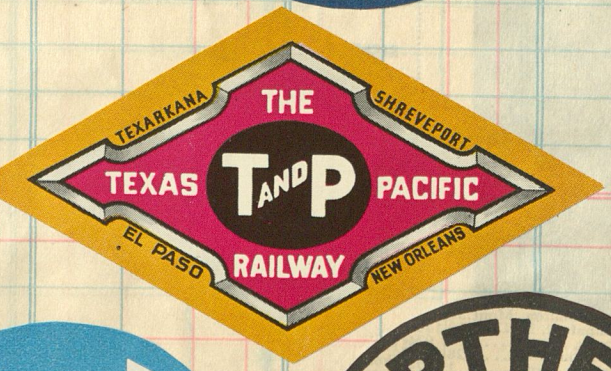
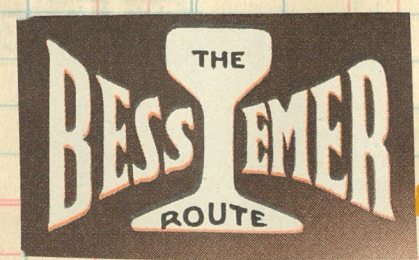
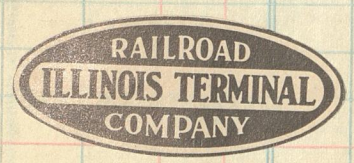
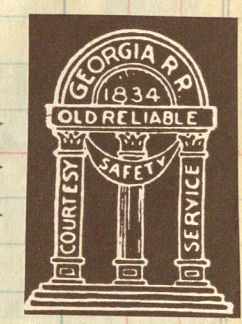
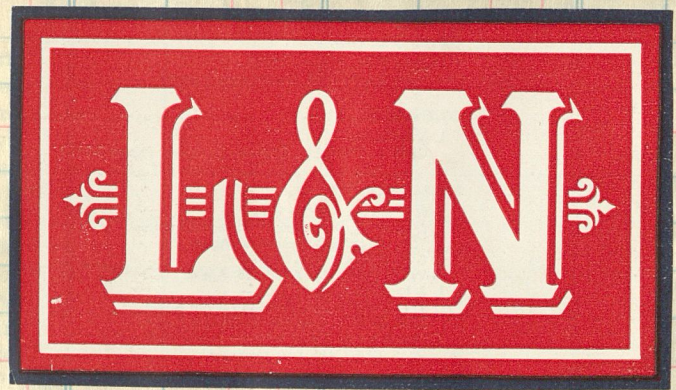
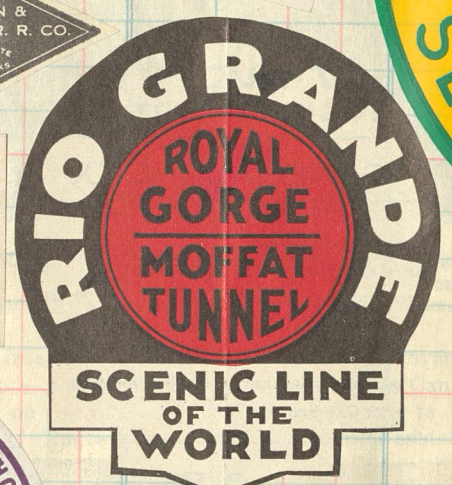
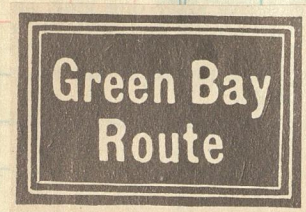
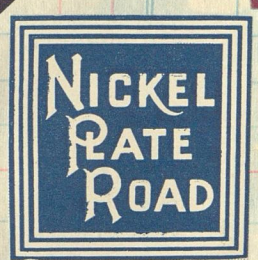
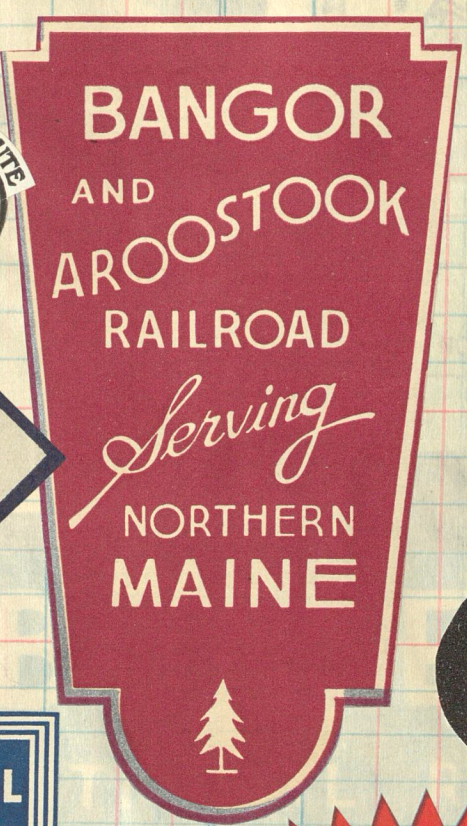
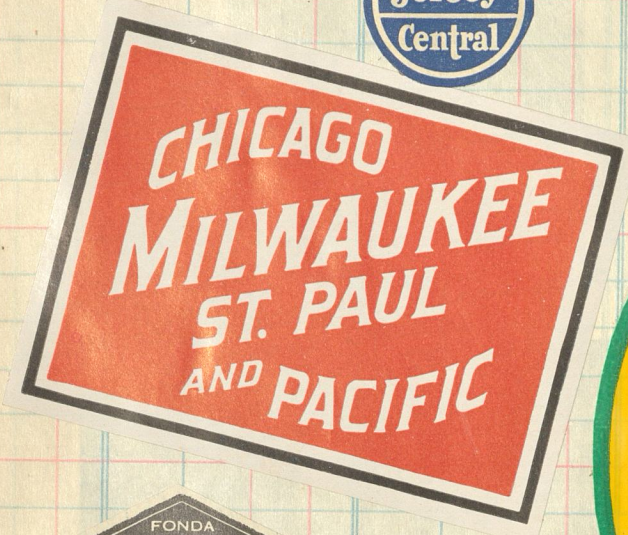
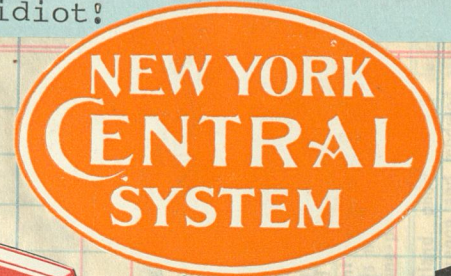
Copy of the front and reverse side of a locomotive Shop Card from the New York Central's West Albany Shops. Such a card was made up for every engine when entered into the shops for first time and then kept on file. Each major engine shop had its own file of cards but information as to shopping done was entered on the card for that engine at each shop involved. This card was for a former Beech Creek, Clearfield & Southwestern 4-8-0 #69 built by Schen in 1898. Road absorbed by the NYC&HR and noed 2629, 3629, 629, 81 and last as Raquette Lake #1. It had various repairs made at both Avis [Pa.] and West Albany shops. Note the excellent penmanship of the person who made the endorsement "Demolished at West Albany Feb 15 1916". This card, along with thousands of others, was rescued by a group of rail fans (including Ed May) out of a dump when the West Albany Shops were abandoned!

NEW BOILERS			REPAIRS			REMARKS			UNITED STATES SAFETY APPLIANCE STANDARDS		
DATE	PLACE	KIND	DATE	PLACE	AMOUNT	CLASS	MP373 REC'D				
12/11/07	Avis		12/24/09	"	31770	E		Note repaired and sold to R.T. D.			
			11/11/11	"	75125	E		March 21, 1916 for 4000. Plus			
			5/27/13	"	1600.78	G		497.73 value of scrap of R. Tr. No. 1			
			9/30/13	"	1219.14	D		817 numbers 26 to 19 to Nov. 1914			
			7/11/14	WEST ALBANY	22990	E					
			12/24/14	"	171296	E					
			4/14/15	"	35323	FL					
					51143	FL					
NEW FIRE BOX											
DATE	PLACE	KIND									

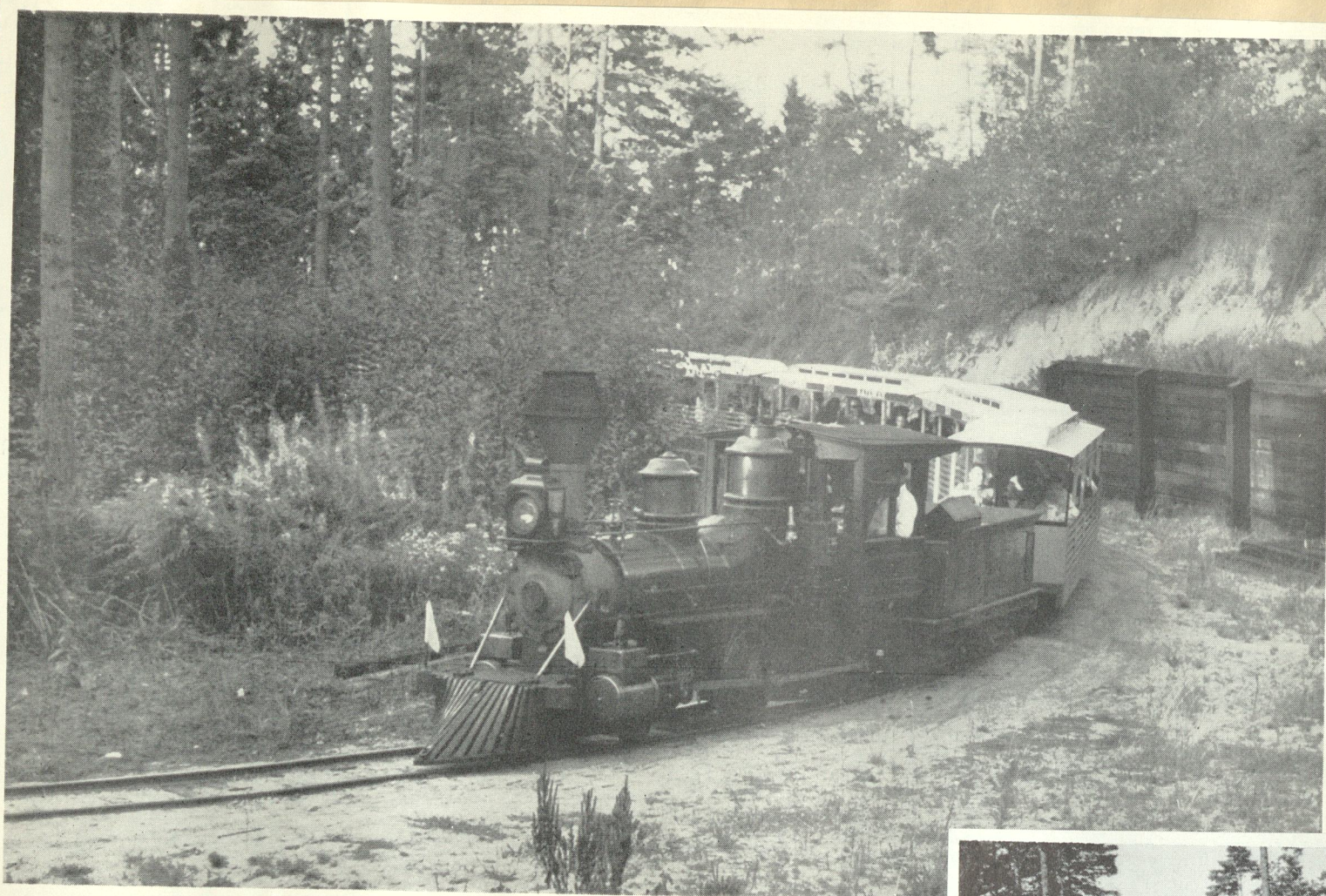
Changes on 9th additions & Boilers made
Note: 1916 1/2 of 1915 amount of 1/2
Sold to R. T. 3/21-14



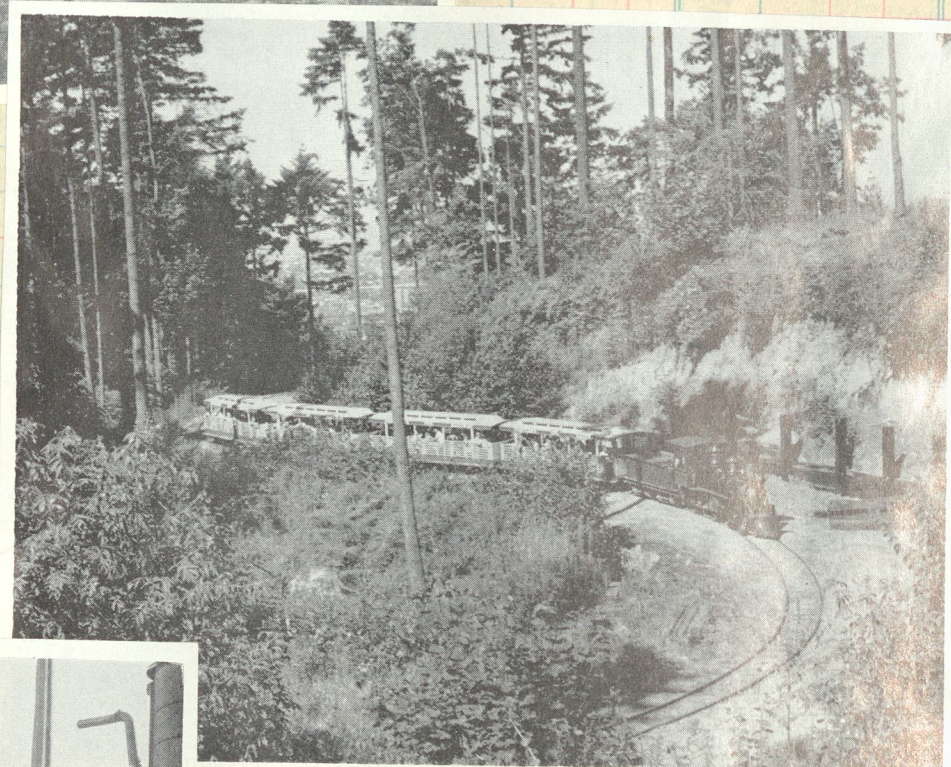
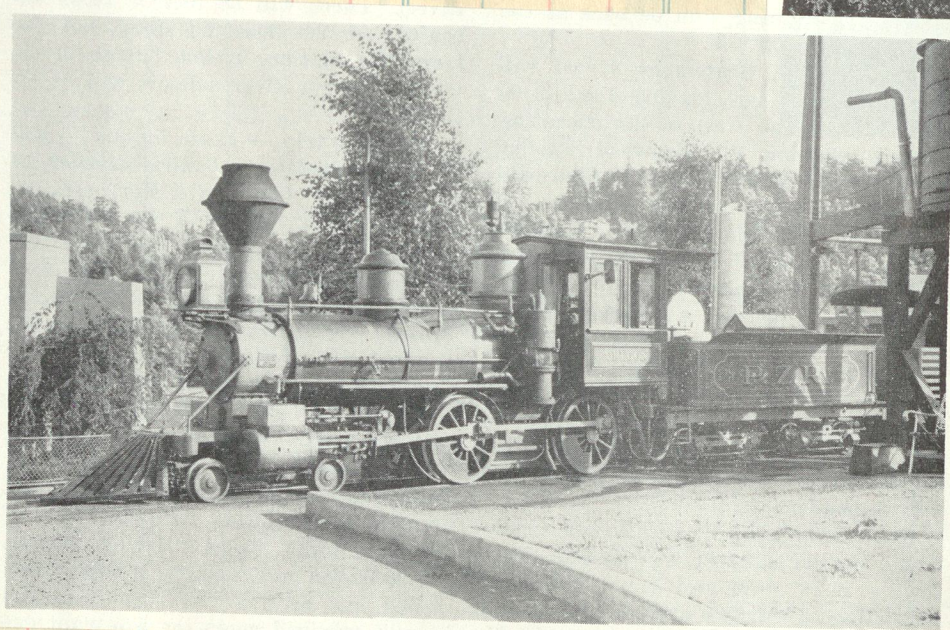
The TRADEMARKS (emblems or logos if you will) of the railroad companies of the past were distinctive, artistic and attractive which only proved that much effort and consideration went into their design. All but a very few have disappeared and those in use today look like scrawls of a kindergarten child or a futuristic blob of a Madison Avenue idiot!



There are numerous little "park" railroads scattered about the country to provide entertainment for youngsters. One such pike is in Portland's [Ore] Washington Park built to 30" gauge with about two and a half miles of track. The little 4-4-0 was built in 1959 from plans of the V&T's RENO.



Front cover and above





Burlington Hill

5



© Ewing Galloway, N. Y.
Tying 'Em Down: An Old-Time Shack Setting
Armstrong Brakes with the Aid of His Brake Club

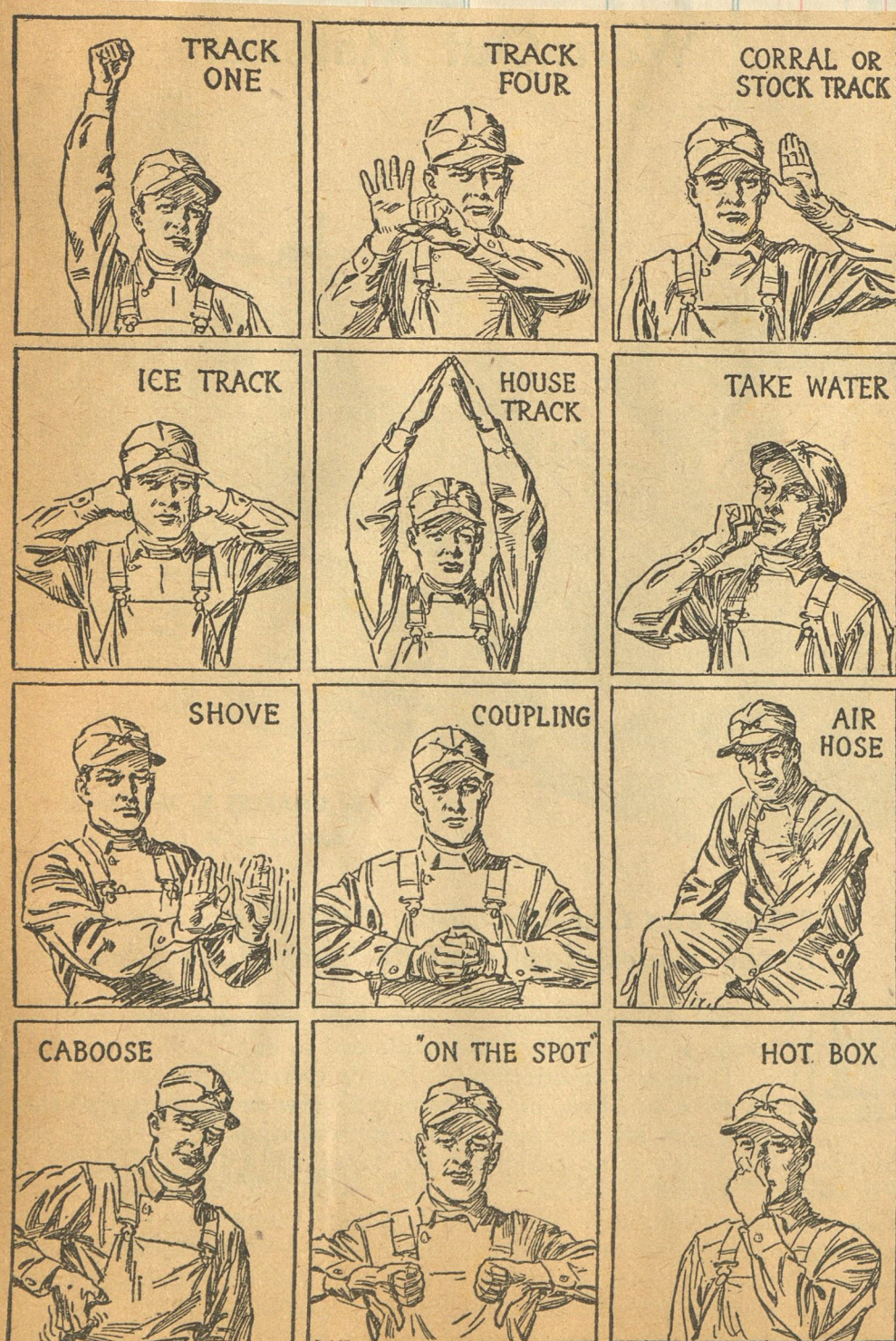
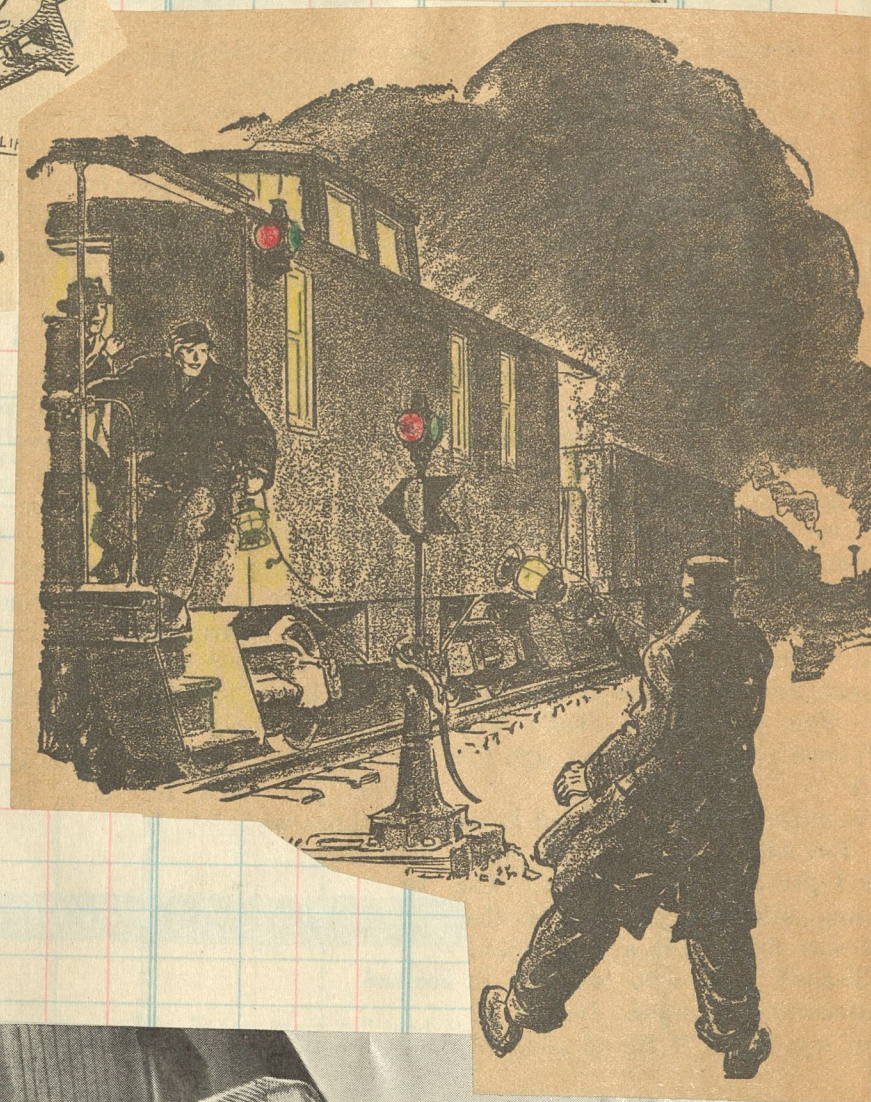
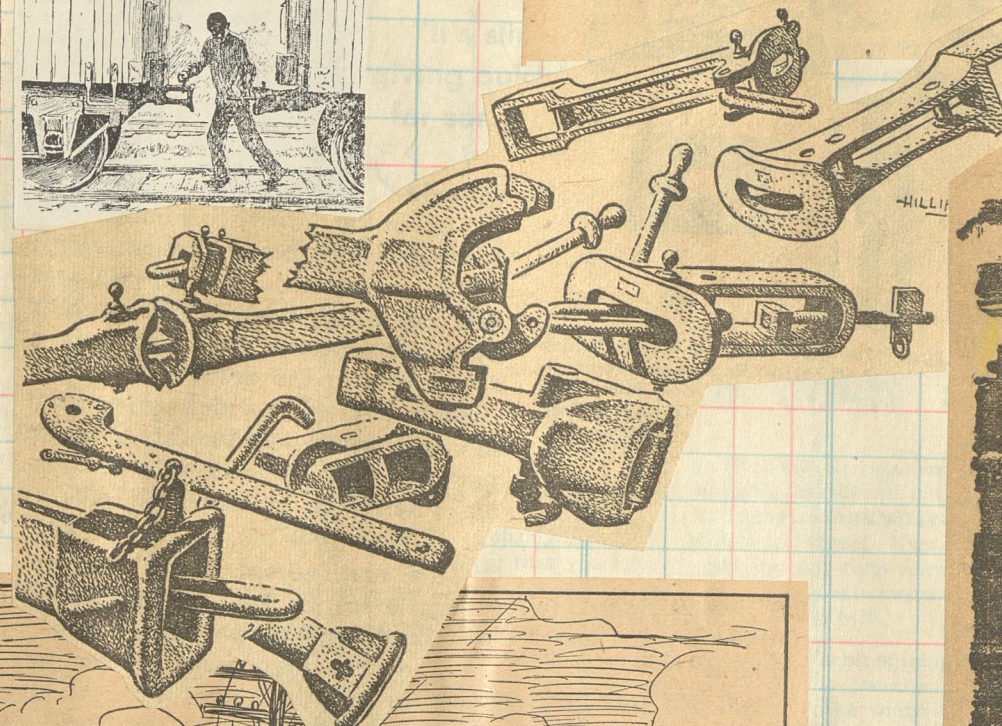
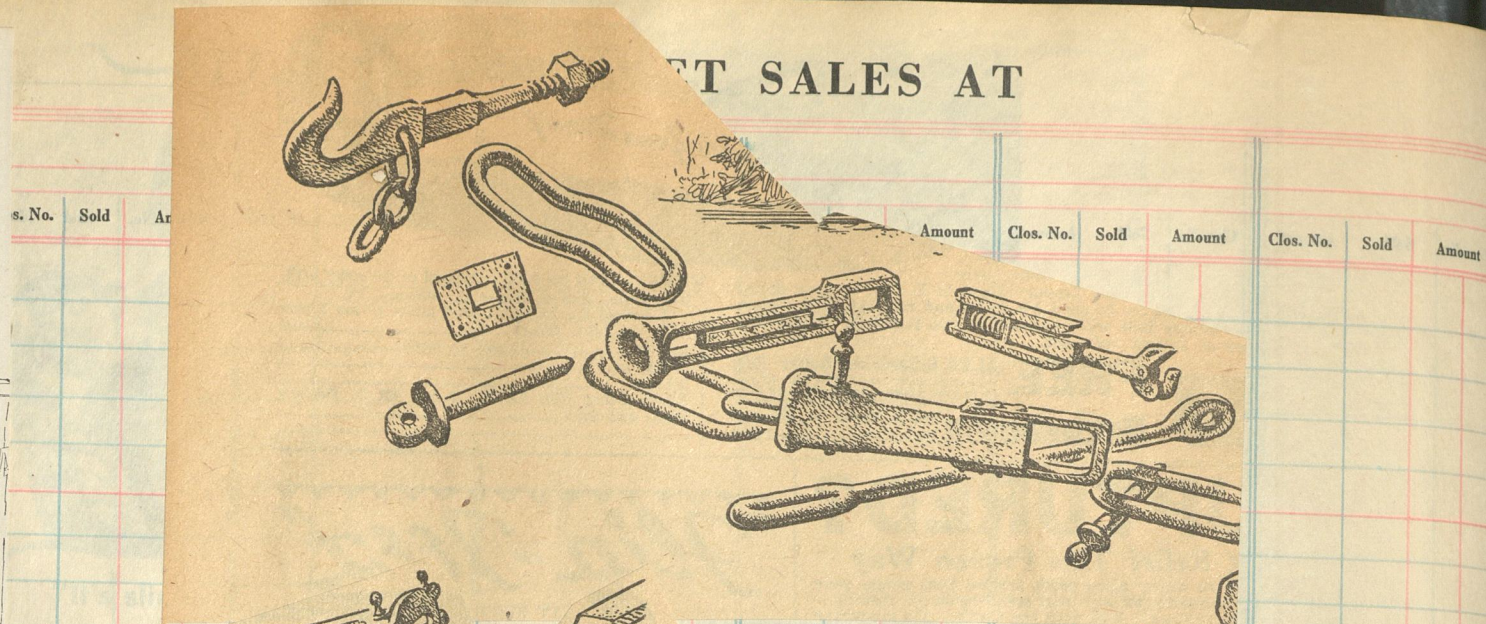
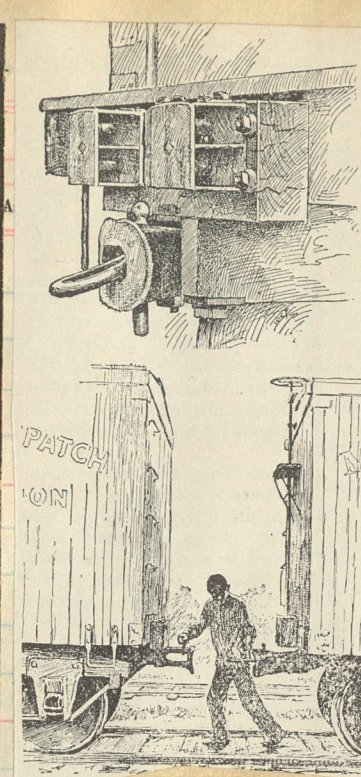
TYING 'EM DOWN was a tough job for brakemen when the old girl pulled a string of fifty cars and the hoghead signalled an emergency stop

KING OF THE ROAD

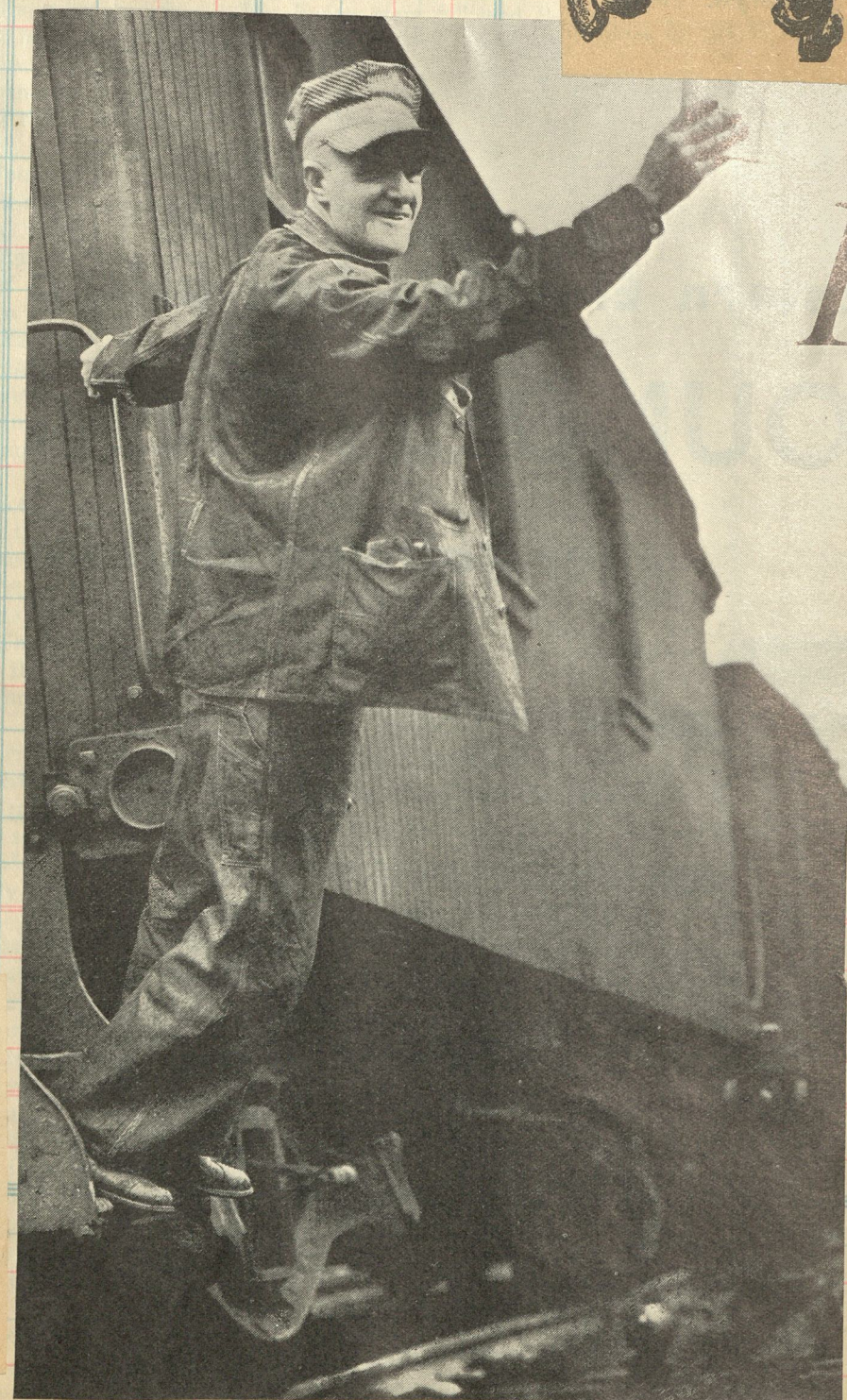
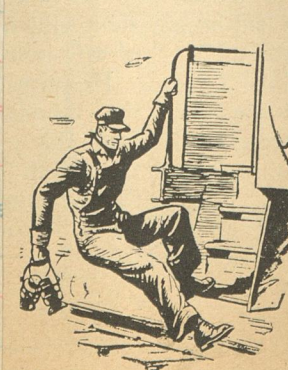
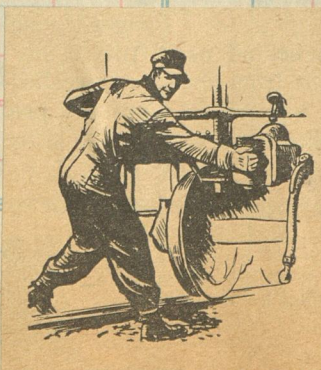
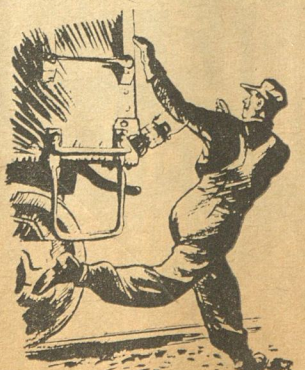
ALL COMPLETE



Old-Time Railroading: "Down Brakes!"

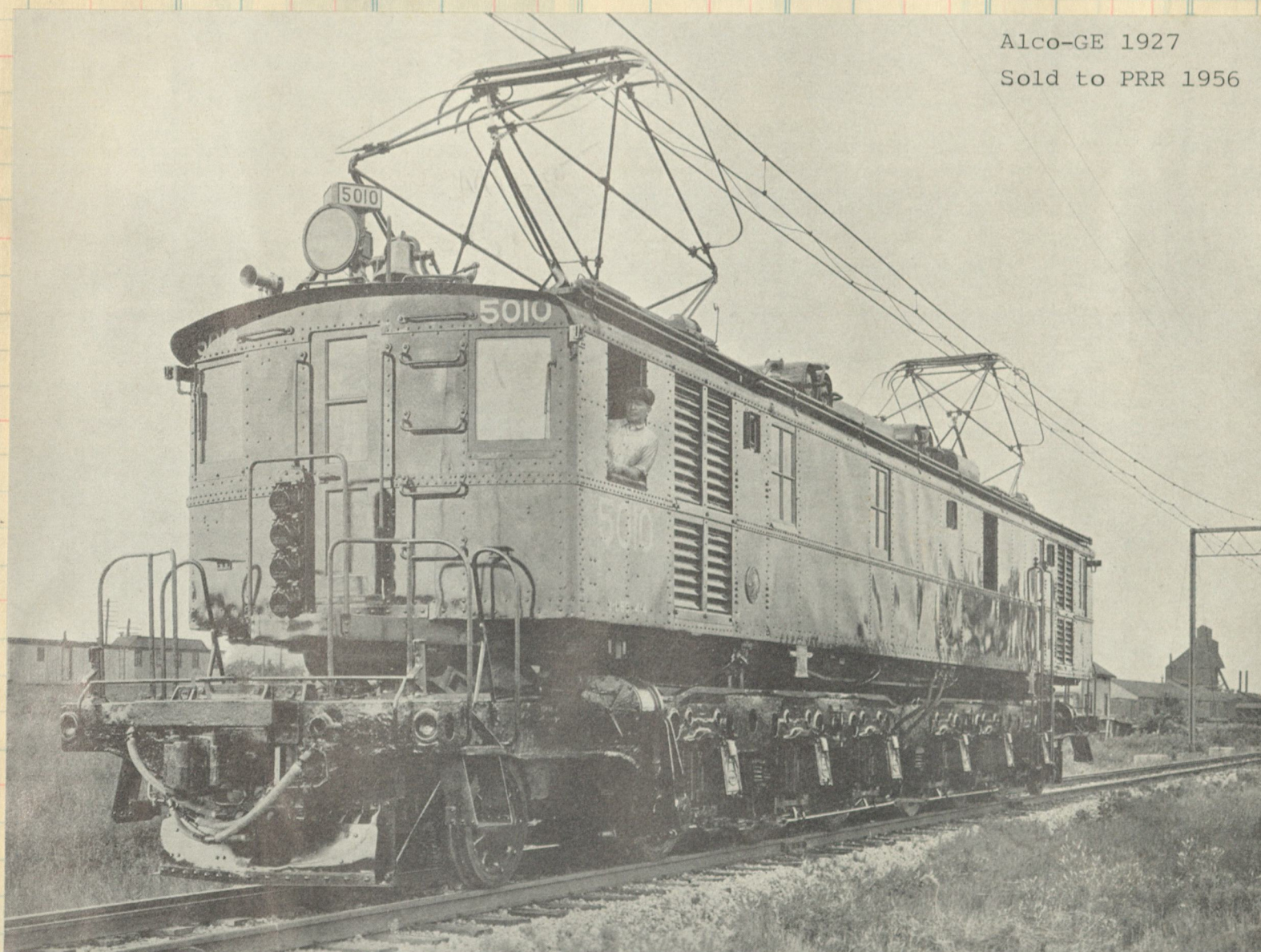


BACK IN THE DAYS Harry C. Temple
 "YOUR paw says he'll give you those ninety acres if you'll come back to the farm"

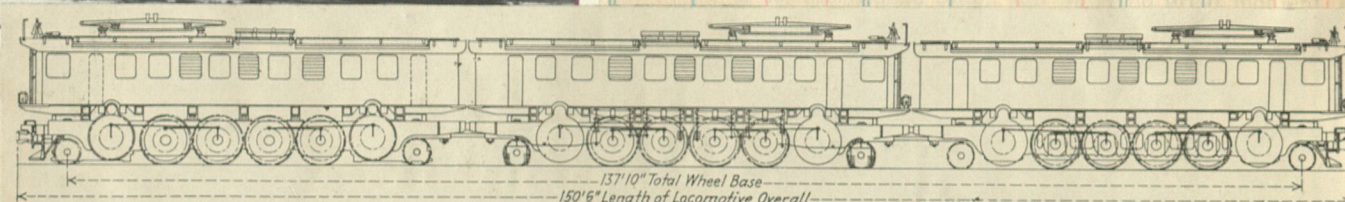


A black and white photograph of a diesel locomotive, identified by the text "C.M. & St. P. 10252" on its side. The locomotive is dark-colored with a prominent silver or light-colored cylindrical section in the middle. It has a complex arrangement of pipes, valves, and a large exhaust stack on the left side. The locomotive is positioned on a set of tracks, and the background shows a hilly, wooded landscape under a clear sky.

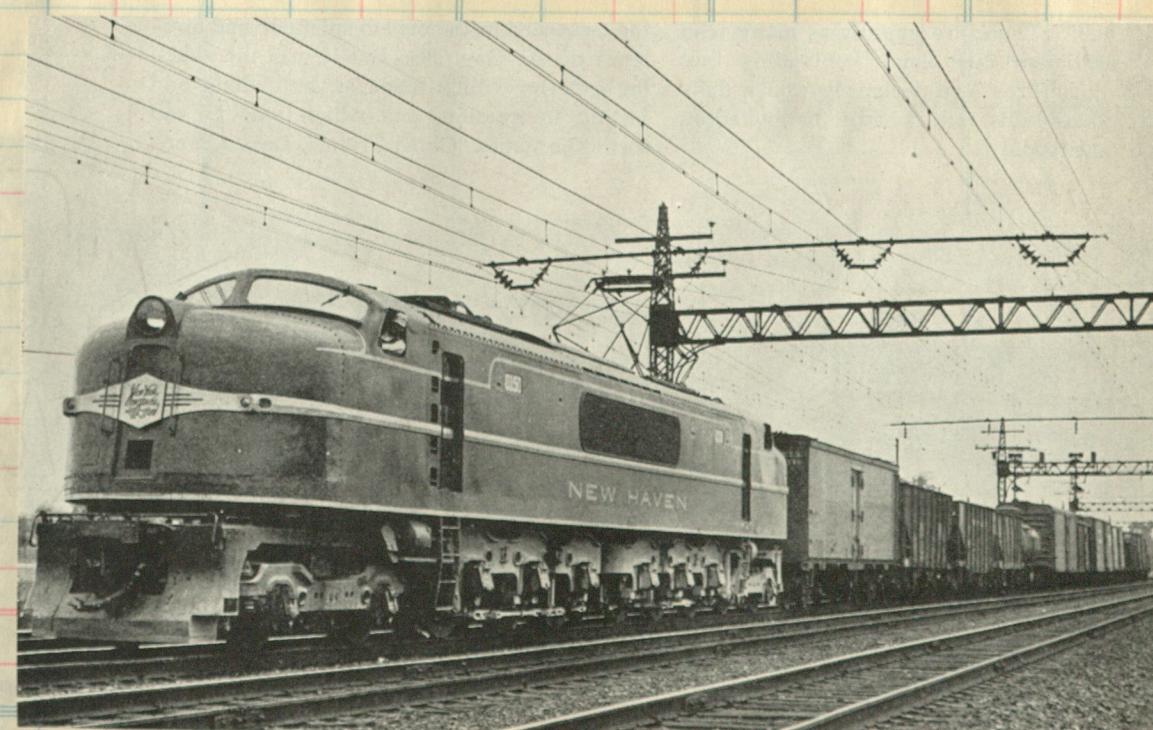
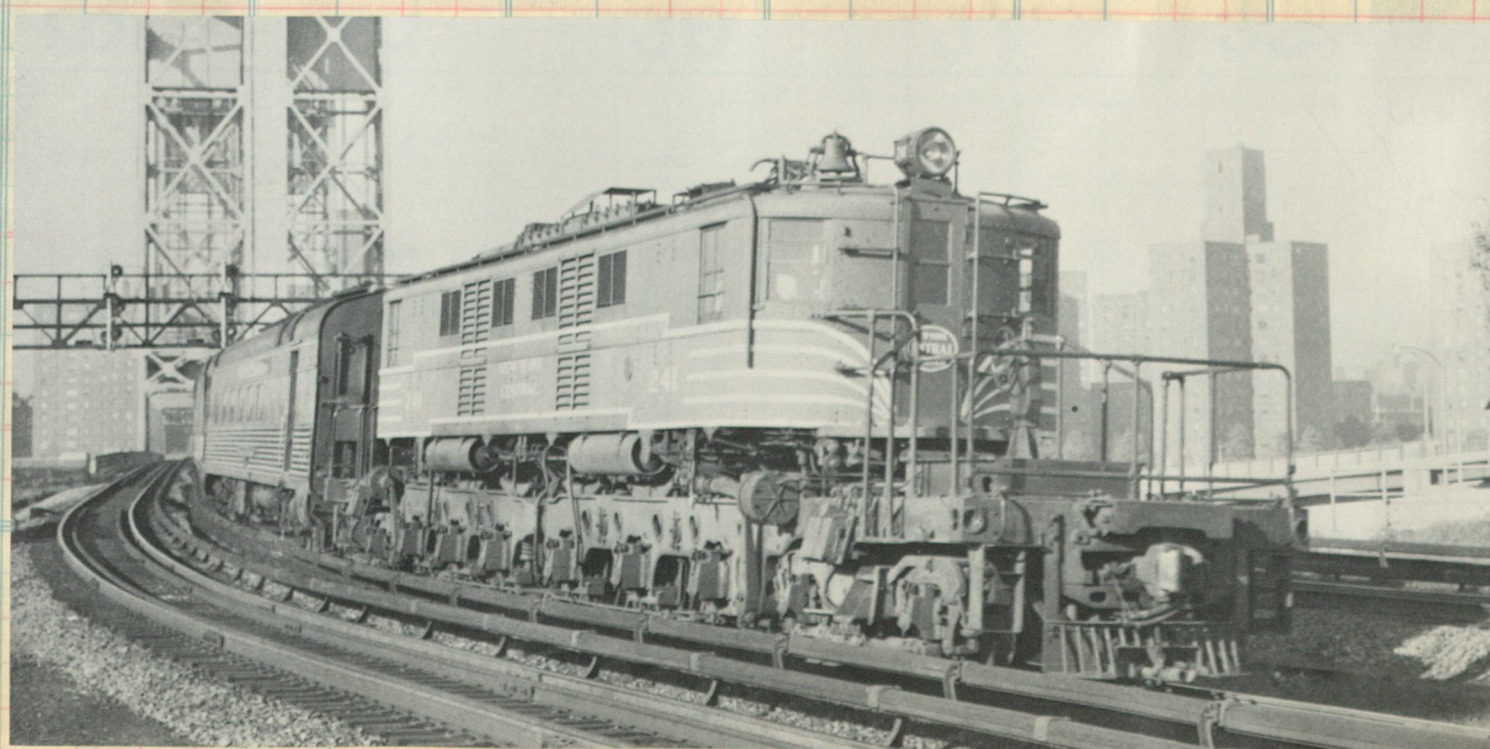
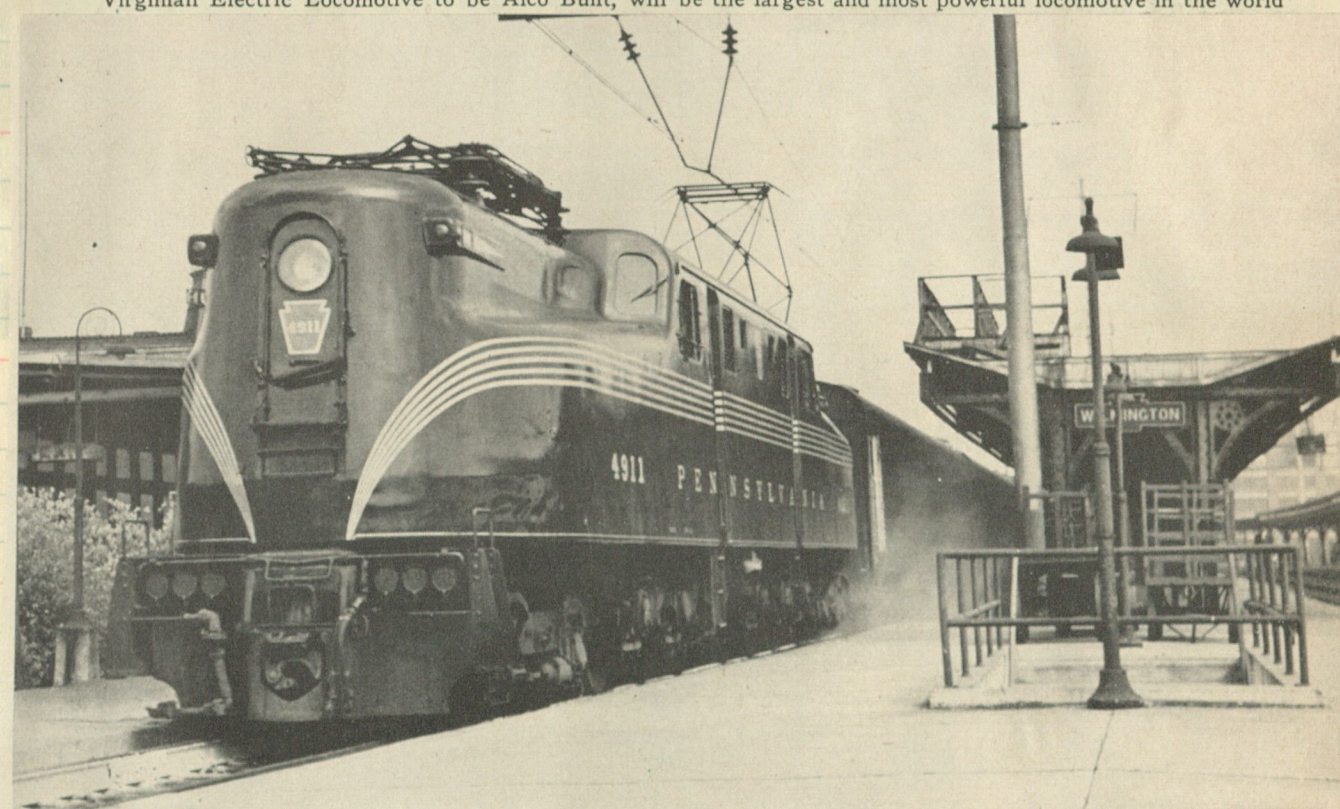
Electrification of major rail lines in the United States did not gain the popularity it had in other parts of the world. Most was brought on due to operation thru tunnels or within city areas. Only two extensive projects were realized in the U.S.; on the old StPaul's Puget Sound extension and the P.R.R. New York-Washington-Harrisburg undertaking. Only about a dozen Class I roads had some form of electric operation, mostly for suburban service or tunnel work. Of the hundreds of inter-urban lines, however, nearly 100% were electric operations.

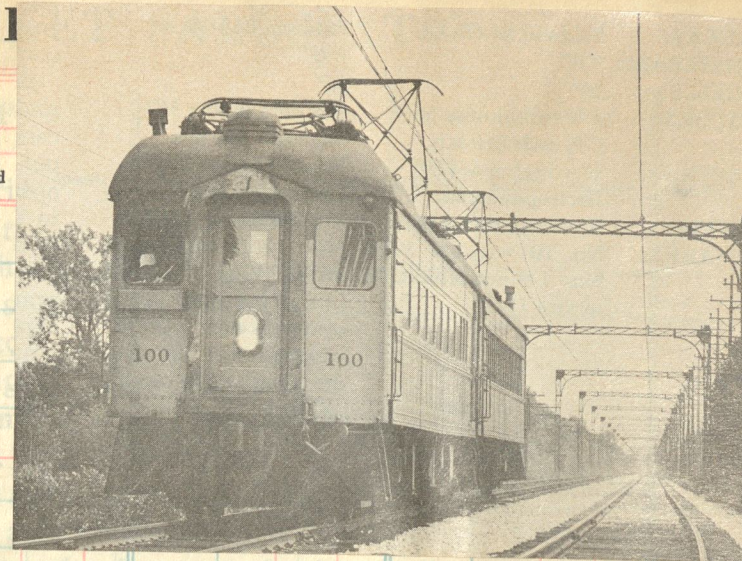
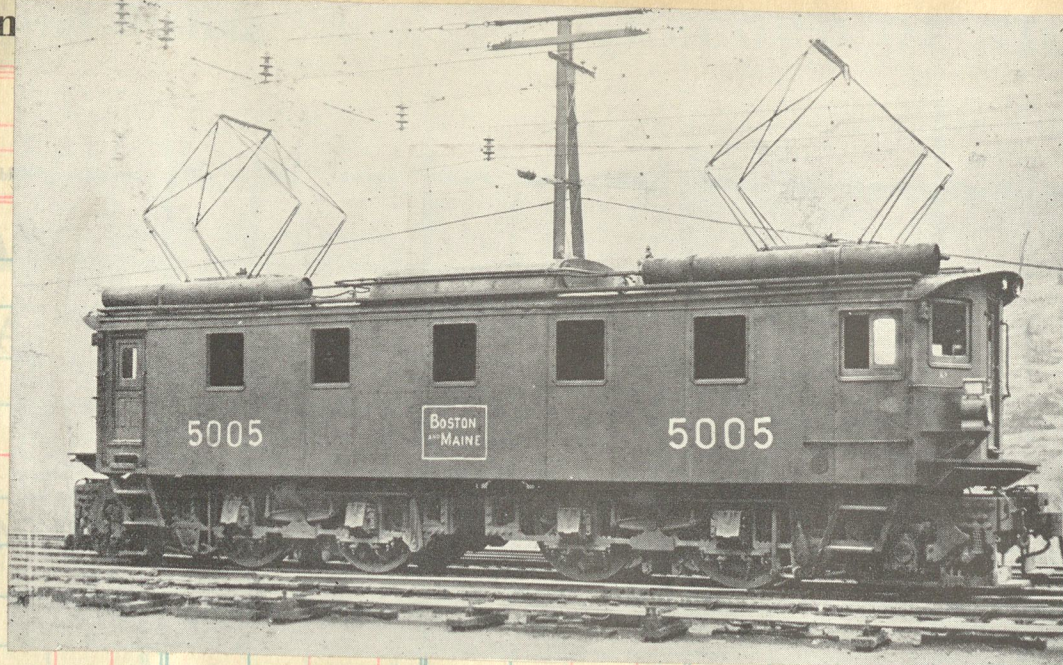


Alco-GE 1927
Sold to PRR 1956

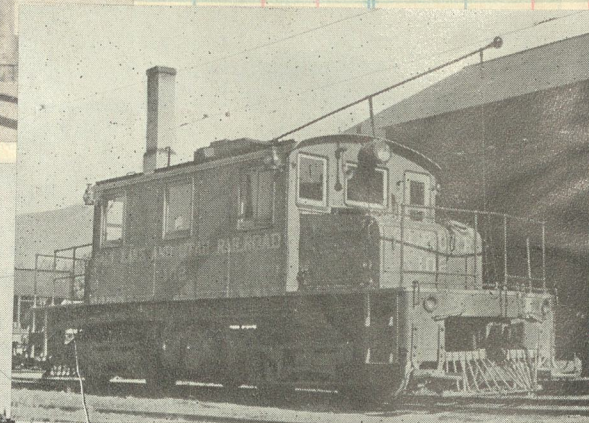
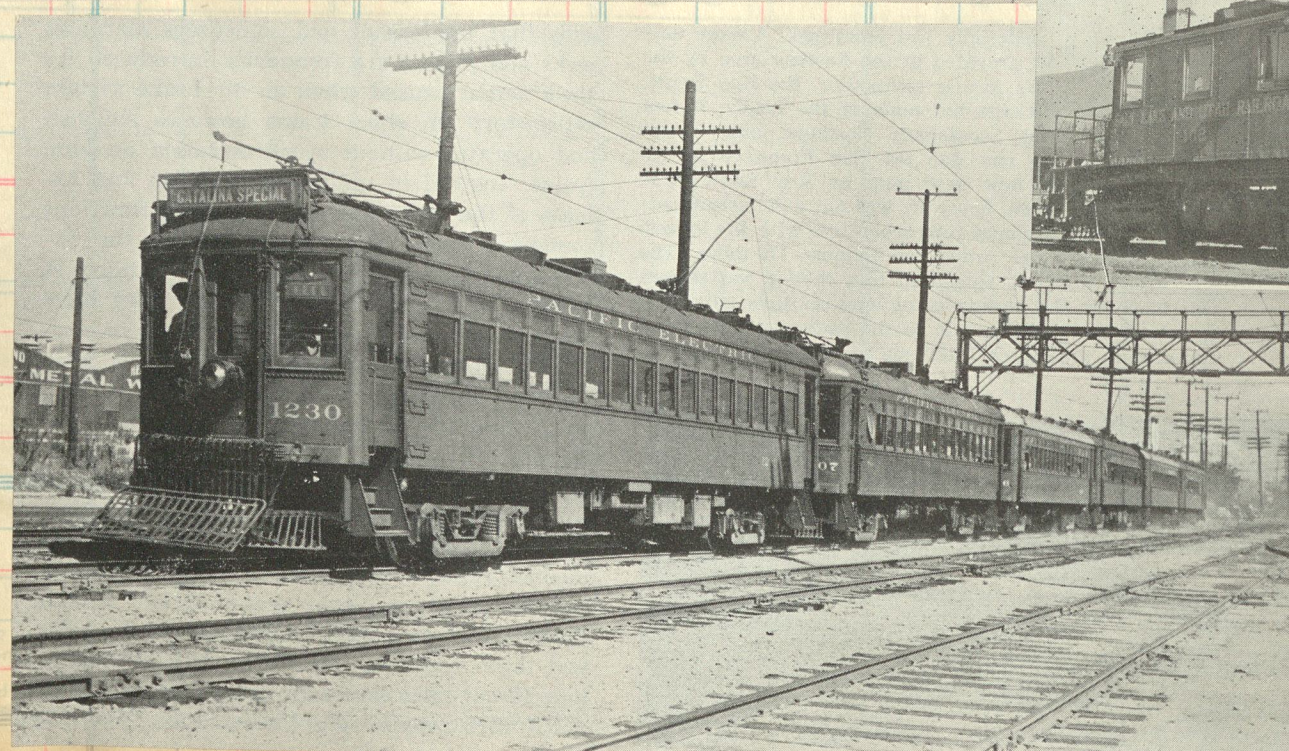
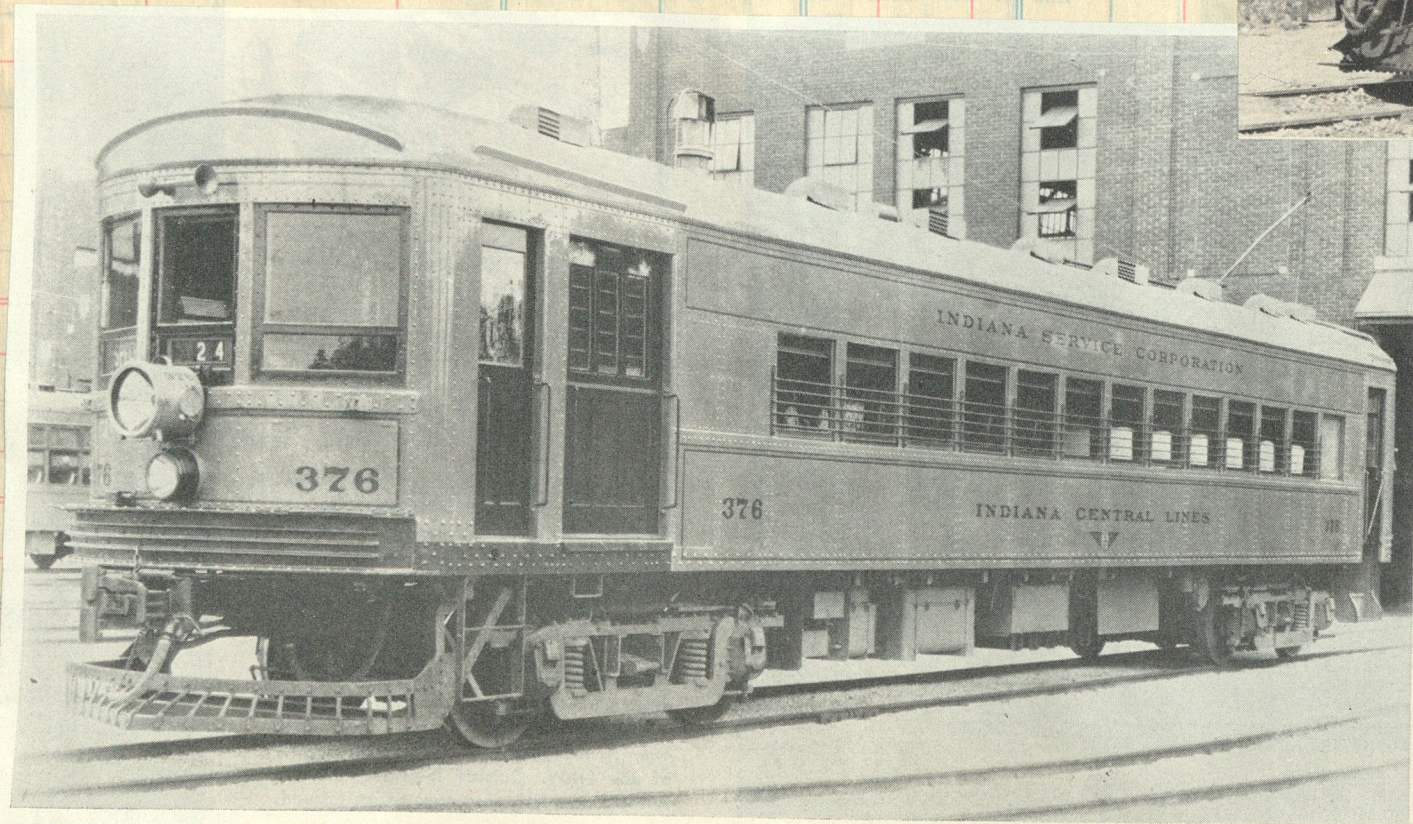
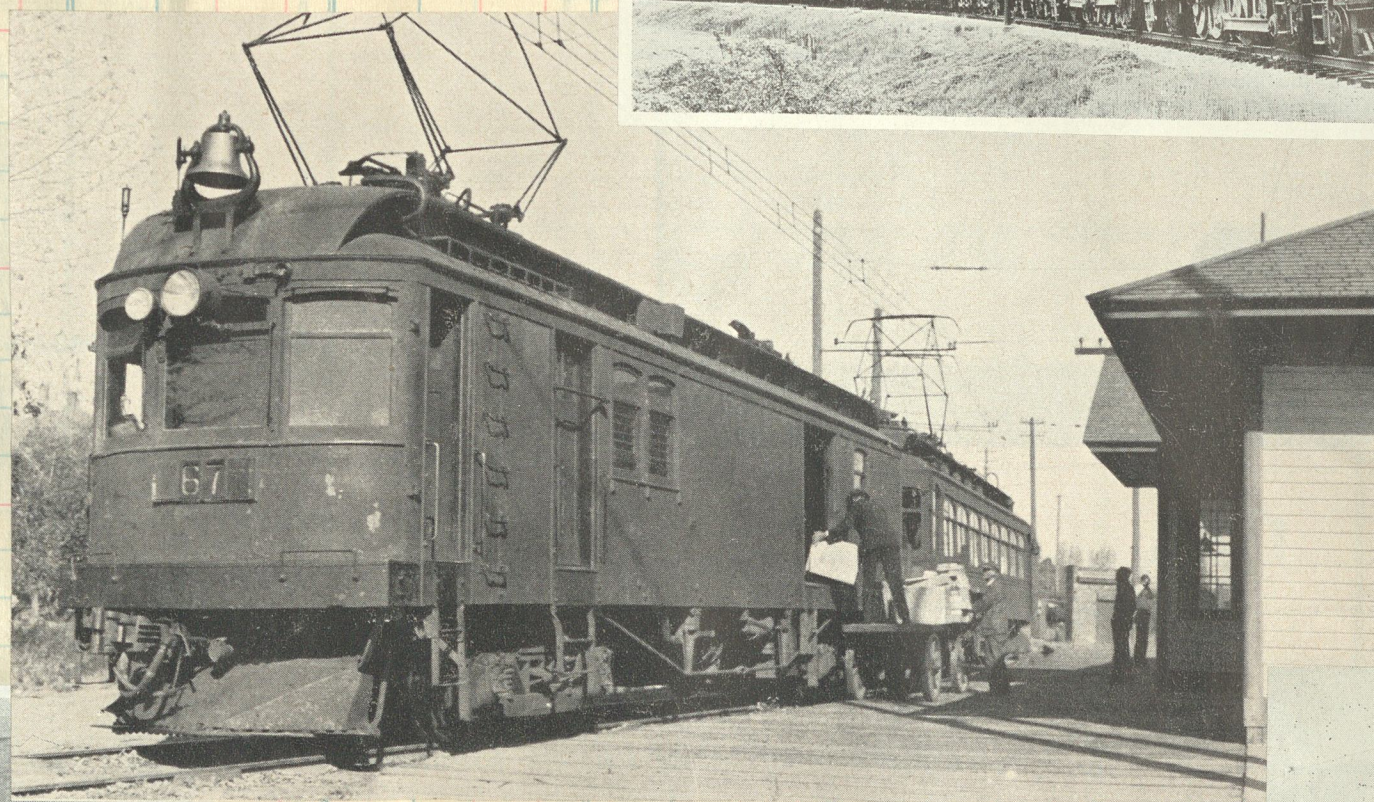
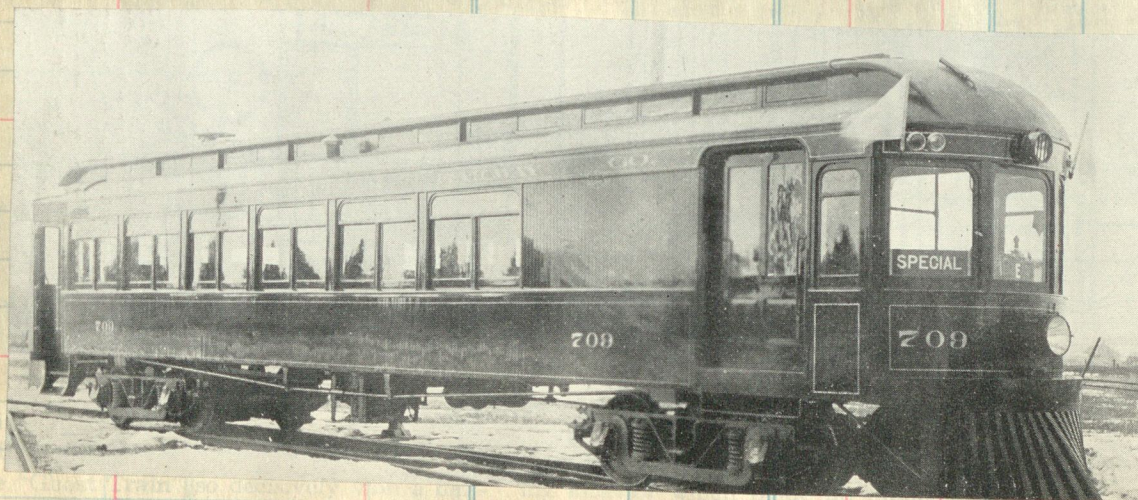
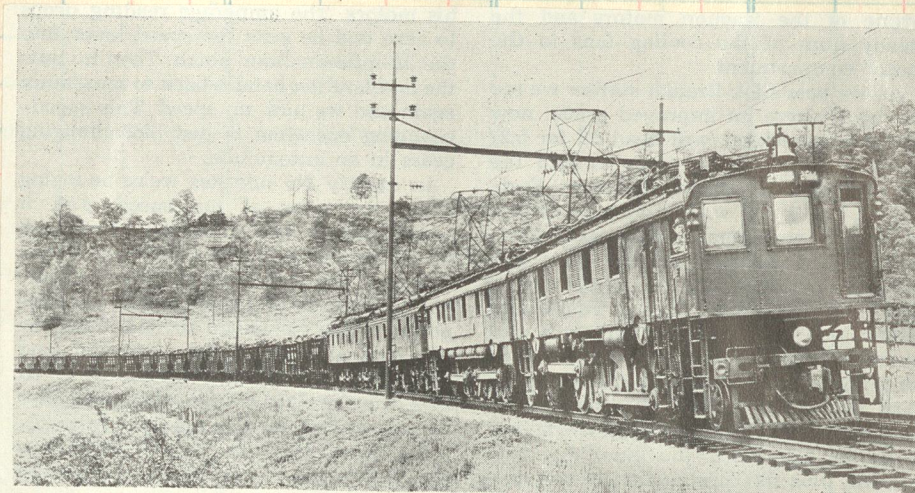
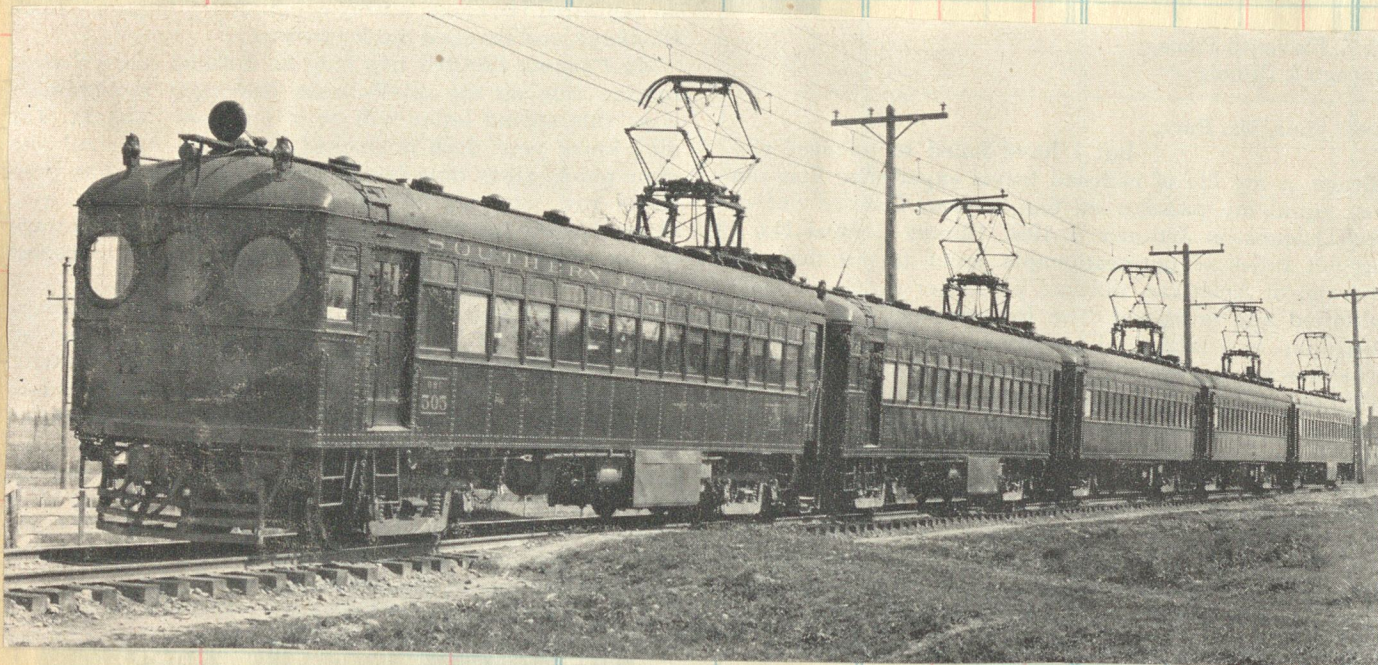
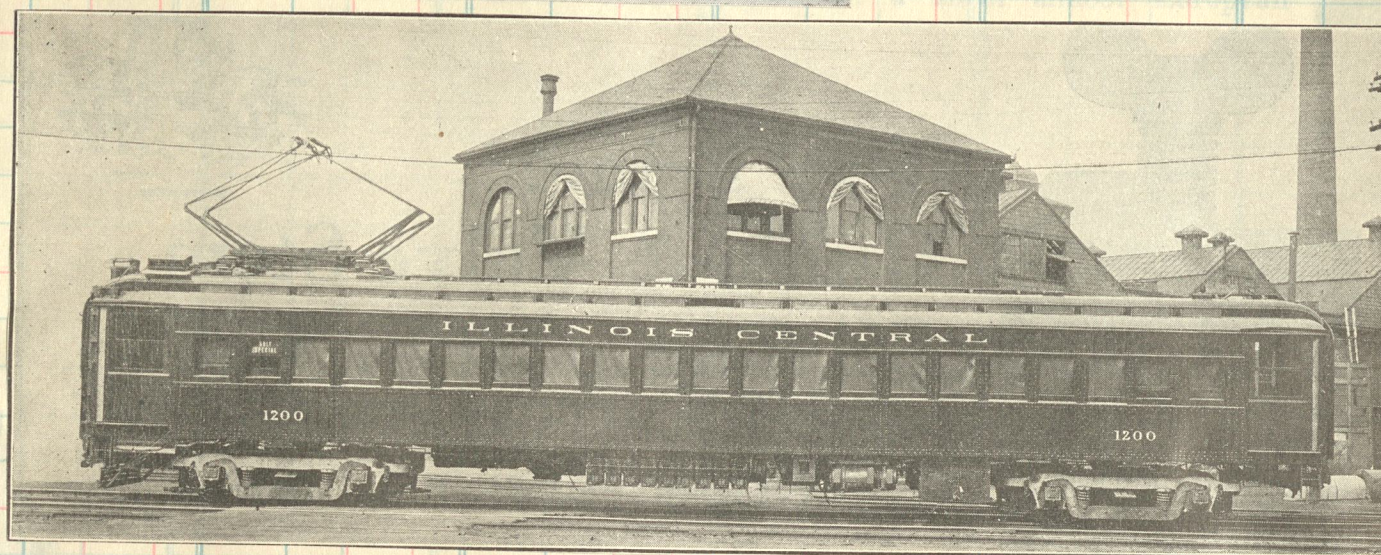


Virginian Electric Locomotive to be Alco Built, will be the largest and most powerful locomotive in the world



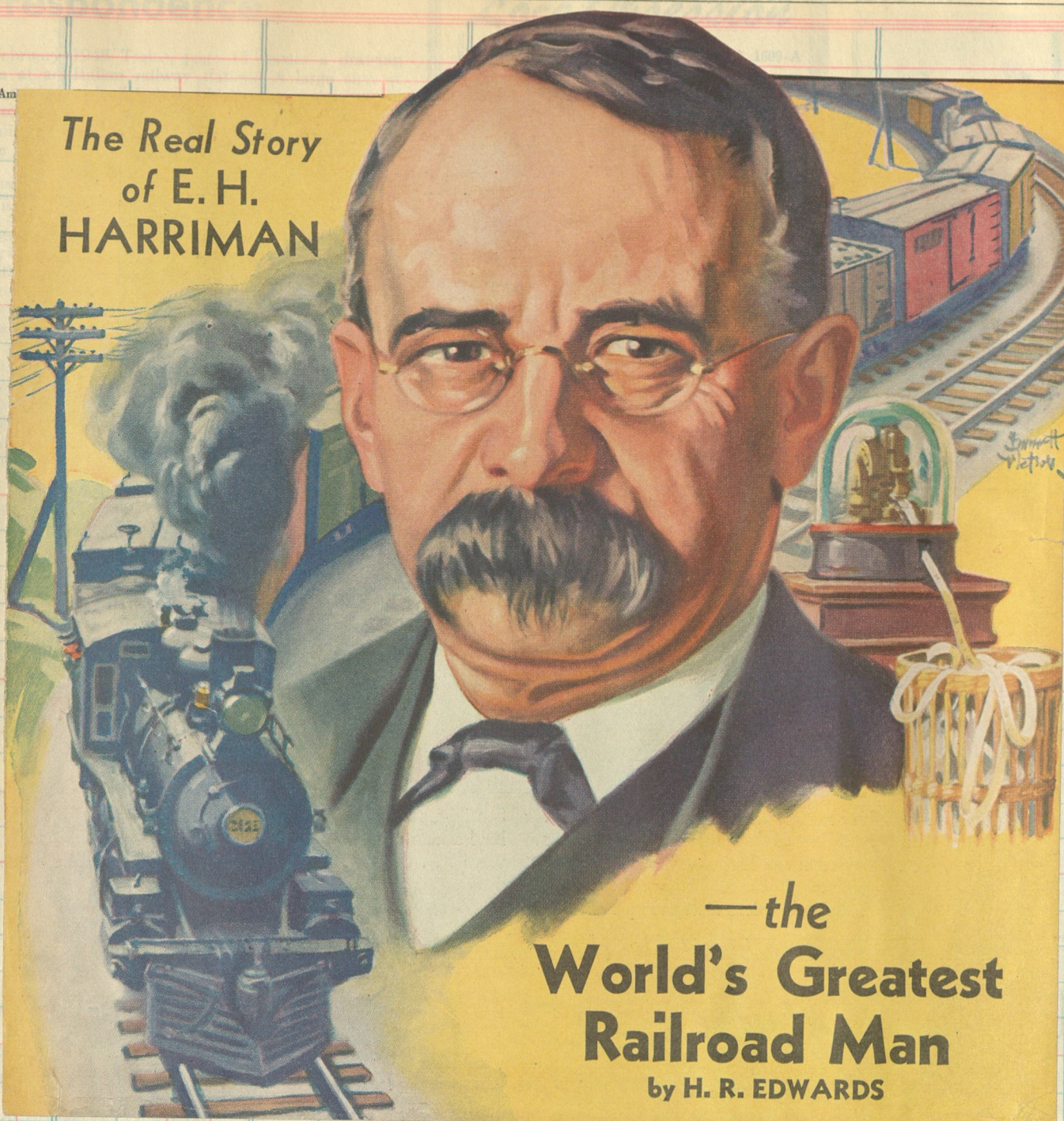


Sold Amount



Clos. No. Sold Am

The Real Story of E. H. HARRIMAN



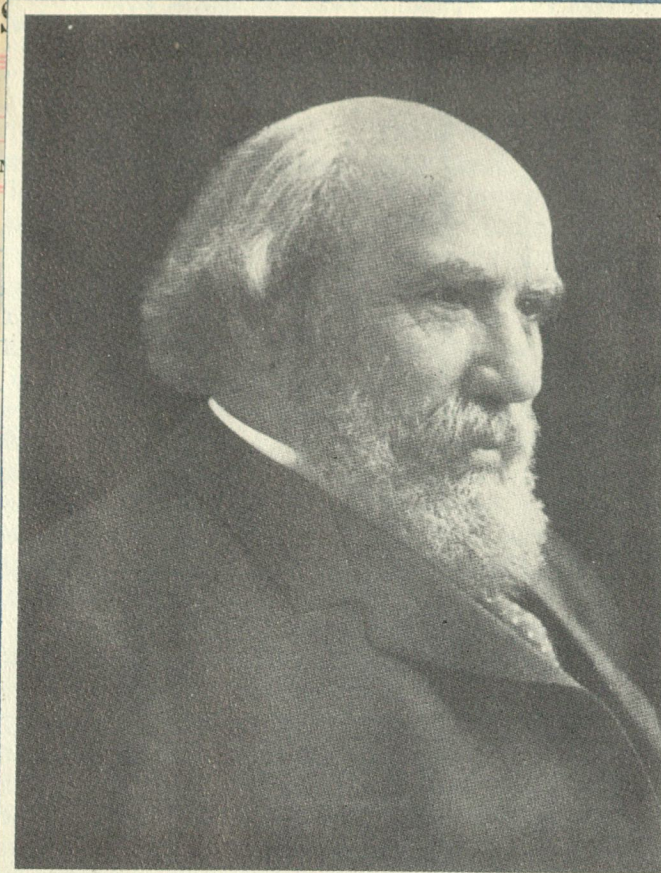
—the
**World's Greatest
Railroad Man**
by H. R. EDWARDS



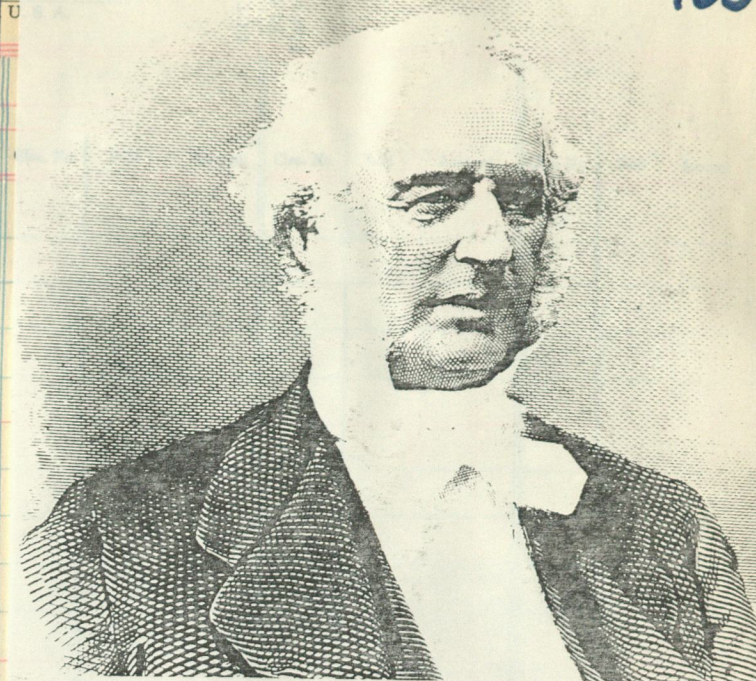
William H. Vanderbilt (1821-1885), heir of Cornelius Vanderbilt, was the richest man in America in his time. — Collection of Allen County Historical Society.



Jayson Gould (1836-1892), master speculator and opportunist, was the arch-rival of the Vanderbilts. — Collection of Allen County Historical Society.



James J. Hill



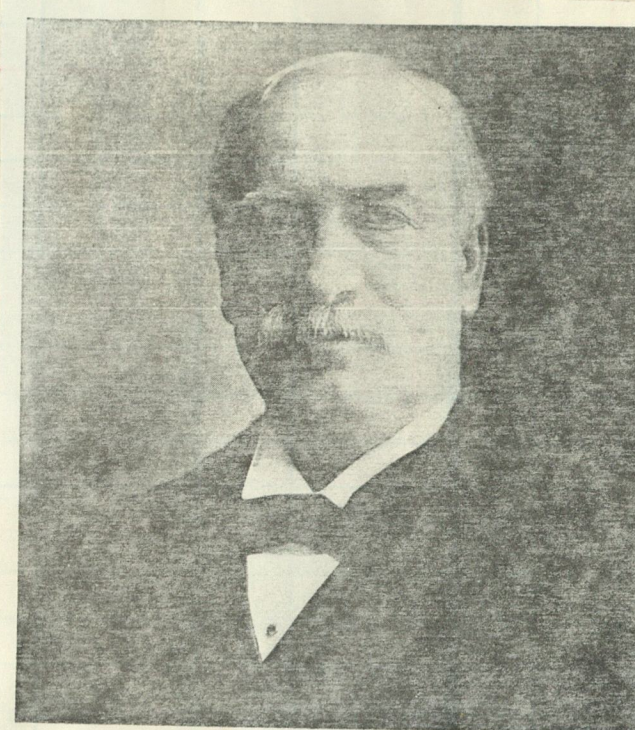
CORNELIUS VANDERBILT

May 27, 1794

January 4, 1877

He began making his fortune in steamboats and didn't enter railroading till he was about sixty-five years old. Gruff, tough, profane, and shrewd, he was called "Corneel" by his mother and close friends, "Commodore" after his shipping days, and "Old Man" when in railroading. His greatest (some say only) love was his youngest son, George Washington Vanderbilt, named after the Nation's Founder whom Cornelius greatly admired. Young George was everything the Commodore wanted in a son, but he died at the age of twenty-five from tuberculosis contracted while a Union soldier in the Civil War.

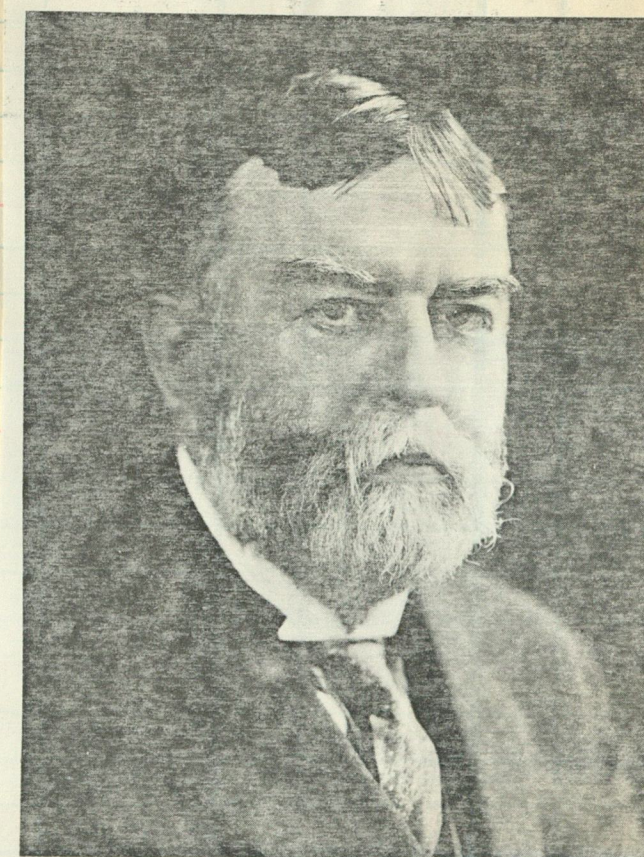
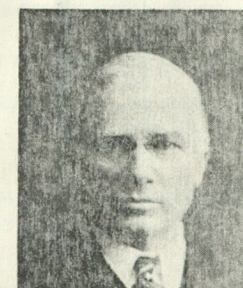
A firm believer in self-reliance, he thoroughly enjoyed the power that accompanied immense wealth. His only nonprofit avocation was his pair of famous trotters, the best team money could buy, for he had to win at whatever he was doing. In his later years he softened somewhat and became more concerned with perpetuating his life's work, now materially represented in the New York Central Railroad.



HENRY VILLARD, the shrewd old German who welded together a network of rails to form one of the great transportation lines in the Pacific Northwest. His famous "blind pool" is still a legend in financial circles, a coup that gave him control of the Northern Pacific. (Courtesy of Oregon Historical Society).

Daniel Willard

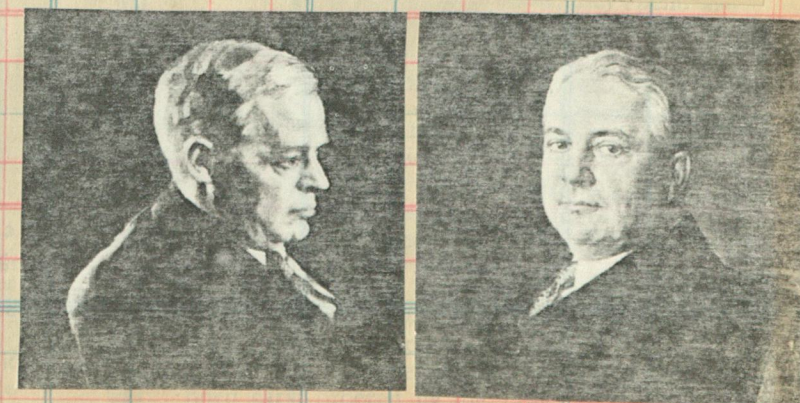
(1861-1942) Affectionately known as Uncle Dan. Worked successively for the Central Vt., Lake Shore, Soo, Erie, Burlington and fourteenth President of the B&O, Jan. 1, 1910. Thoroughly trained operating man he led the road through the "Golden Years". In June 1941, became Chairman of the Board.



L.F.L.

Eighth President of the D&H, 1907-1938.

L.F.L., last of the old time "iron fisted" railroad bosses.



The Van Sweringen brothers who built their "empire" around the Nickel Plate in the Twenties.

Without a doubt the railroads of the United States had their "Finest Hour" during the period of World War II. Accomplishments in transportation made in that period far exceeded any records in the history of the U.S. roads and never will be equaled again. The United States will always owe a debt of gratitude to its railroads for the service they rendered during a most crucial era.

"RIGHT OF WAY FOR THE U.S.A."



UNCLE SAM gets the green light on the railroads today. We're sure you'd want it that way—for America has a war to fight all over the world, and a job at home to produce and deliver in overwhelming volume the things fighting men need. These come first among the million tons of freight moved a mile on the rails every minute.

The railroads are united in working with each other—with industry and farmers—with the govern-

ment—to keep America's great war program rolling.

Whether the job calls for passenger equipment or freight—whether it's one of moving troops by the hundreds of thousands, moving raw materials or finished fighting machines—every railroad man knows that the first rule today is, "Right of Way for the U.S.A."

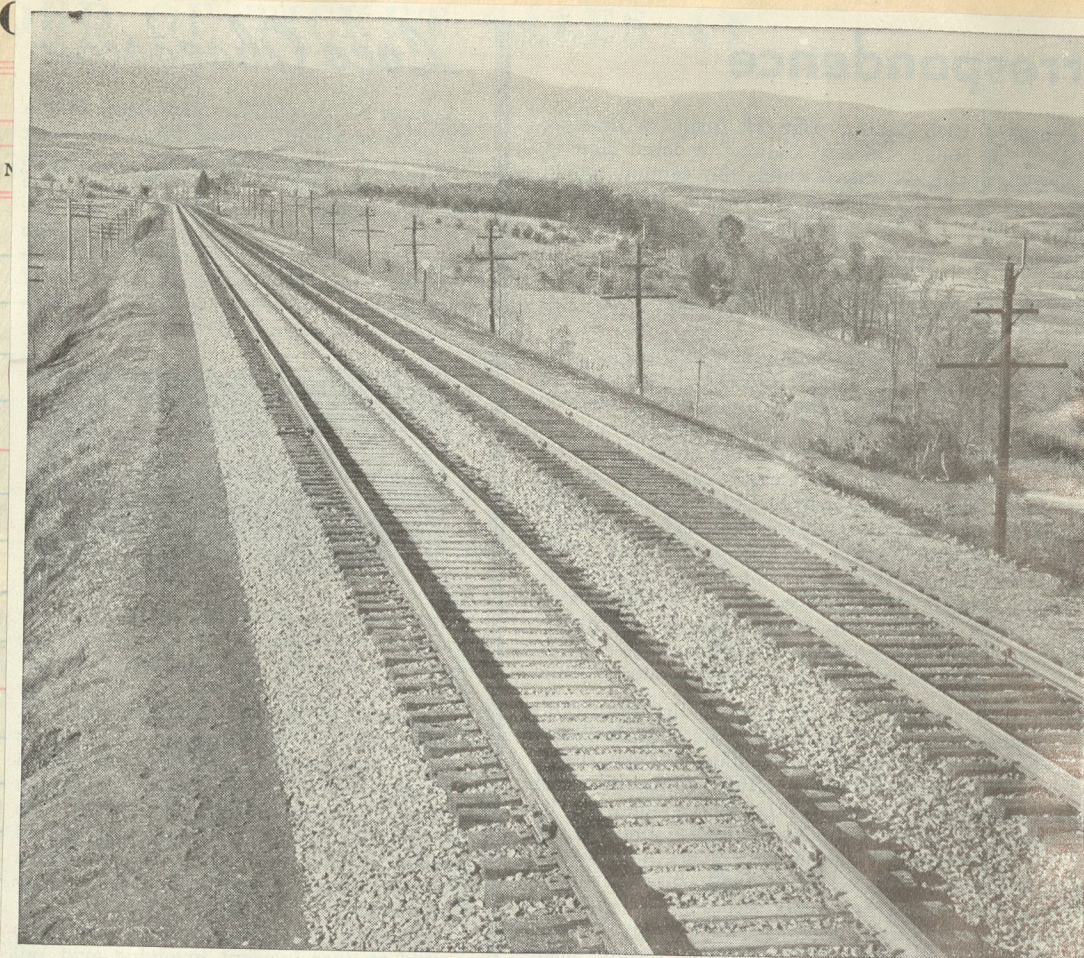


ASSOCIATION OF
AMERICAN RAILROADS
WASHINGTON, D. C.



From December 1941 to August 1945 the railroads operated 113,891 special troop trains, in addition to troop cars handled in regular trains. In one year, 1944, the passenger-mile total was 95½ billion, nearly triple the previous high of 38 billion in 1923.

Since war started, America's railroads have broken all records. Without increased equipment, 17,000 freight trains haul 64,000,000,000 ton-miles a month—two and a half times the load of 1939



WORLD'S BUSIEST HIGHWAY

Over such highways — 230,000 miles of them — more freight and passengers are moving today than ever moved before anywhere on earth by any means of transport. • In 1944, the railroads hauled nearly three times as much inter-city freight, and nine times as much war freight, as all other carriers combined. • That is one of the great lessons to come out of the war — what modern American railroads can do. • And one of the things to remember after the war is won is that in peacetime, too, America needs and must have the kind of transportation which only its railroads can deliver.



ASSOCIATION OF
AMERICAN RAILROADS
All United for Victory

Railroads Operate 2,500 Troop Trains a Month

More than 2,500 special trains are operated by the railroads each month to move the nation's military forces and their equipment, according to M. J. Gormley, executive assistant to the president of the Association of American Railroads in an address before the Cleveland Traffic Club on May 24. These special trains, he said, require hundreds of locomotives, approximately 10,000 tourist cars, 5,600 coaches, 300 standard sleepers, 3,200 baggage cars, 6,200 flat cars, 500 box cars and 850 other cars, including hospital cars, express refrigerators, gondolas and stock cars.

In this war, Mr. Gormley said, the average number of moves made by an American soldier is considerably higher than it was in the first World War, and the average distance that each one travels is much greater. Today, he said, the average soldier makes between six and eight trips from the time of his induction until he embarks for overseas, as compared with three in the last war. The average move now is approximately 800 miles, he said.

Pointing out that although it takes all forms of transportation to meet the Nation's wartime needs, Mr. Gormley declared that the biggest part of the job, most essential part, is that done by the railroads. "If it were not for the network of rails that stretches from one end of the country to the other," he maintained, "it would be impossible for us to carry on an armed conflict of the intensity and scope of the present struggle."

Comparing the size and complexities of the transportation task in this war with that in the last, Mr. Gormley commented: "The American railroads had a big job to do in the first World War, and, in spite of the transportation difficulties of 1917, which were beyond their control, they did it exceedingly well. The job this time is much bigger and much more difficult, and requires not only more transportation, but also better transportation."

In providing this, Mr. Gormley continued, our railroads are carrying more than half again as much freight traffic and more than one-fourth more passenger traffic than in 1918. They are handling this greatly increased business, he said, "without congestion or delay of any consequence and with none of the distress of the first World War period."

The railroads have been able to do such a big job, Mr. Gormley explained, because of "wise planning, organization and co-operation between the railroads and those who use them."

As the war progresses, Mr. Gormley declared, traffic will continue to increase and the railroads will have to carry the heavier load without getting much in the way of additional equipment.

"This," Mr. Gormley concluded, "means that greater utilization will have to be gotten out of the present railroad plant. And that, in turn, means that the entire transportation team—not only the railroads, but the railroads, the shippers and receivers and the government—will have to do its full part. Freight cars will have to be made to do even more work than they did in record-breaking 1942, and locomotives will have to perform more transportation service."

"The job ahead will not be easy, and there may be times when our railroads will be strained to the limit. But I feel confident that with the co-operation of those who use the railroads and with the addition of the cars and locomotives they must have, our railroads will be able to take care of nation's transport demands."

Railway Age—June 5, 1943

The Latrobe plant of the American Locomotive Company was awarded an Army-Navy "E" pennant on May 25. This is the second plant of the company to receive this production award. The Schenectady plant was similarly honored last August, and the Dunkirk plant received the Maritime "M" in December.

MANY TRAINS WILL BE CROWDED DURING HOLIDAY SEASON

CITIZENS ASKED TO BEHOLD REVEREND TRAVELERS

Logistically speaking

THE STRATEGY

THE RAILROAD MANAGER

THE RAILROAD WORKER

THE MILWAUKEE ROAD

SERVING THE SERVICES AND YOU

SUMMER TRAVEL

faces a CAUTION signal

"HI-YA, SOLDIER"

IS YOUR Holiday Trip NECESSARY?

NORFOLK and WESTERN Railway

DON'T PLAN A TRAIN TRIP THIS CHRISTMAS

UNTIL YOU READ THESE VITAL FACTS!

We make this announcement well in advance of Christmas for your own good... and for the good of your country.

The way things look now, the facilities of every railroad in America will be strained to the utmost just prior to, during, and just after the Christmas holidays.

Already, most railroads are operating at near peak capacity. By Christmas, the situation will be considerably aggravated.

Thousands of soldiers on furlough will be leaving to spend Christmas at home with their families. Thousands of soldiers' families will be leaving to spend Christmas near camps.

THREE IMPORTANT SUGGESTIONS

In planning a trip this Christmas, therefore, please observe these suggestions:

1. Don't take a trip at all, unless you feel you must.
2. If you have to make a trip, avoid the period between December 12 and January 12.
3. When you do travel, make your trip as early as possible.

By following these simple suggestions, you will enable the railroads to handle the necessary holiday traffic with a minimum of disturbance to one of our personnel and freight.

NORTHERN PACIFIC RAILROAD

S-P

The friendly Southern Pacific

The Railways Are Advertising on a Much Larger Scale Now Than Ever Before

ENGINE OF WAR

IT'S strange to think of the familiar, friendly locomotive as a weapon of war.

But right now that's what it is.

For locomotives really make possible all the other weapons of war we must have.

They haul the ore and fuel that steel mills require.

They take the steel to shipyards on all three coasts and on the lakes.

They bring the engines, wing assemblies and other parts to the fabulous plants where the fighting planes are made.

They bring the quantities of chemicals, coal and oil, everything that three-shift war plants demand.

And when the planes, tanks, guns and food are ready, locomotives

speed them on their way to the boys at the front.

Today the locomotives of the American railroads are doing a job which, a year or so ago, would have been called impossible. And it is a job so big that only the railroads could undertake it.

It's a job that means sending off a loaded freight train every five seconds of the day and night—that means hauling a million and a quarter tons of freight a mile every minute—and, by the way, doing it for less than one cent a ton per mile.

To do it, the railroads are exacting the greatest service from every available piece of equipment. For other war requirements may prevent them from getting the additional cars and engines the job justifies.

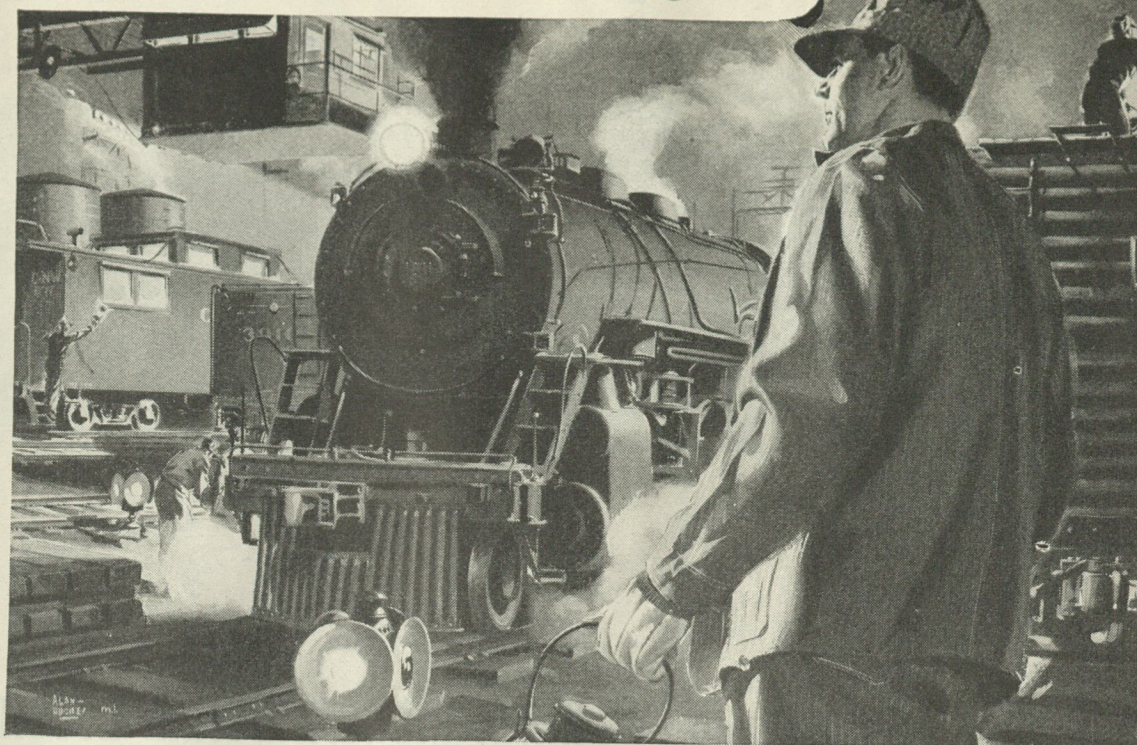
But, with the equipment on hand and what can be obtained, these engines of war will prove themselves mighty weapons in the drive to Victory.

ASSOCIATION OF
AMERICAN



RAILROADS
WASHINGTON, D. C.

Another "Army" the Axis forgot...



THE CARRIERS OF OUR NATION'S WAR FREIGHT

THE greatest job in transportation history is taking place before our very eyes. Short of men and equipment, with little chance of getting needed replacements, our railroads have worked a miracle. What, along with moving troops and taking care of civilian traffic, they have kept the tremendous quantities of raw materials and supplies flowing to our great war production plants in a ceaseless stream, have

carried the finished guns, munitions, equipment and supplies to the docks and to our camps.

It has been a magnificent job of management, and a job, too, that bears witness to the loyalty and determination of the railway workers... a job that deserves the warmest praise.

In importance to the war effort it is second to none! Not even the man actually making shells renders a more effective service.

Let all Americans pay tribute to our railroad men. The uniform they wear is the uniform of their jobs. Their service emblem is the badge of each man's particular branch of the railroad industry. They wear both with more than justifiable pride.

No wonder all America acclaims the achievements of this great army, the railroad men, another "army" the Axis forgot!



The third class of Military Railway Service officers to attend the Fort Slocum Transportation Corps Officers' school was graduated on March 27. The work of the school was described in the *Railway Age* of January 30, page 276. 1943

Middle Left—Officers of a Ry. Grand Division

FRONT ROW: Major W. H. Hathaway (div. atkpr., B. & O.), Lt. Col. W. J. Hotchkiss (supt., Milw.), C. F. White (chf. dspr., B. & O.), Capt. R. H. Coffman (y. m., B. & O.), H. R. Harding (asst. t. m., B. & O.), Major J. S. Major (m. m., B. & O.). SECOND ROW: Capt. J. B. Arter (engr., B. & O.), G. W. Burkley (gen. foreman, B. & O.), R. P. Alexander (supr. psgr. service, P.R.R.), S. L. Morrow (trav. car agt., B. & O.), C. C. Stage (y. m., B. & O.). THIRD ROW: Capt. H. O. Hutson (supr., B. & O.), R. A. Garrigus (gen. foreman, B. & O.). TOP ROW: 2d Lt. W. C. Whitam (rodman, Milw.), 1st Lts. F. H. Drake (sig. supr., D.T. & L.), P. W. Pleasant (electrician), G. W. Padgett (spl. inspr., B. & O.).

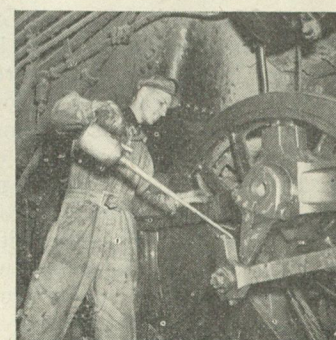
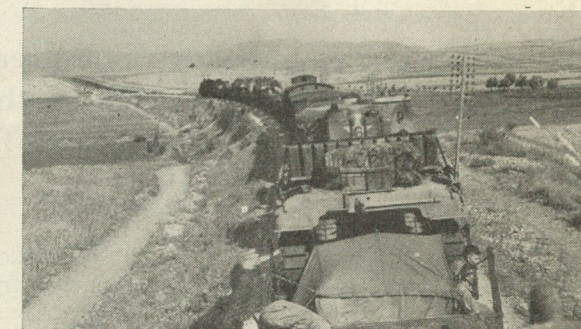


New Among Track Workers Are Women, Who Are Finding an Increasing Place in the Track Forces of a Number of Roads



One of the P. R. R.'s New "Trainwomen" Punching Commuters' Tickets on a Philadelphia Suburban Train

American Military Railroaders in North Africa



ABOVE — American soldiers man both these French-equipped trains at a junction point in North Africa. INSET RIGHT: Sgt. H. Harris of Hubbard, O., an Army Casey Jones, lubricates his African iron horse. BELOW: These military railroaders of the Fifth American Army are wondering if the old girl pulling them is going to make the grade.

RIGHT, top to bottom: (1) Military train rolling easily over flat desert country; (2) All-steel African flat car converted by shelter tents into a G. I. Pullman; (3) Four-wheeler flat car carries a half-track and four military passengers; (4) Arab children at an African station are relieving American soldiers of their chocolate rations.

All photos are by Sgt. Joseph Hansen of the Army Signal Corps.

Equipment used on the rail-

ways of North Africa, according to a report by Sergeant Fred W. Welty, includes 1895 "underslung" French engines, 1918 "General Pershing" models, and 1942 Army locomotives. Cars are, mostly, of the "40 and 8" type. There are no coal chutes; coaling is a hand job. There are no headlights; night operations are performed in total blackout.



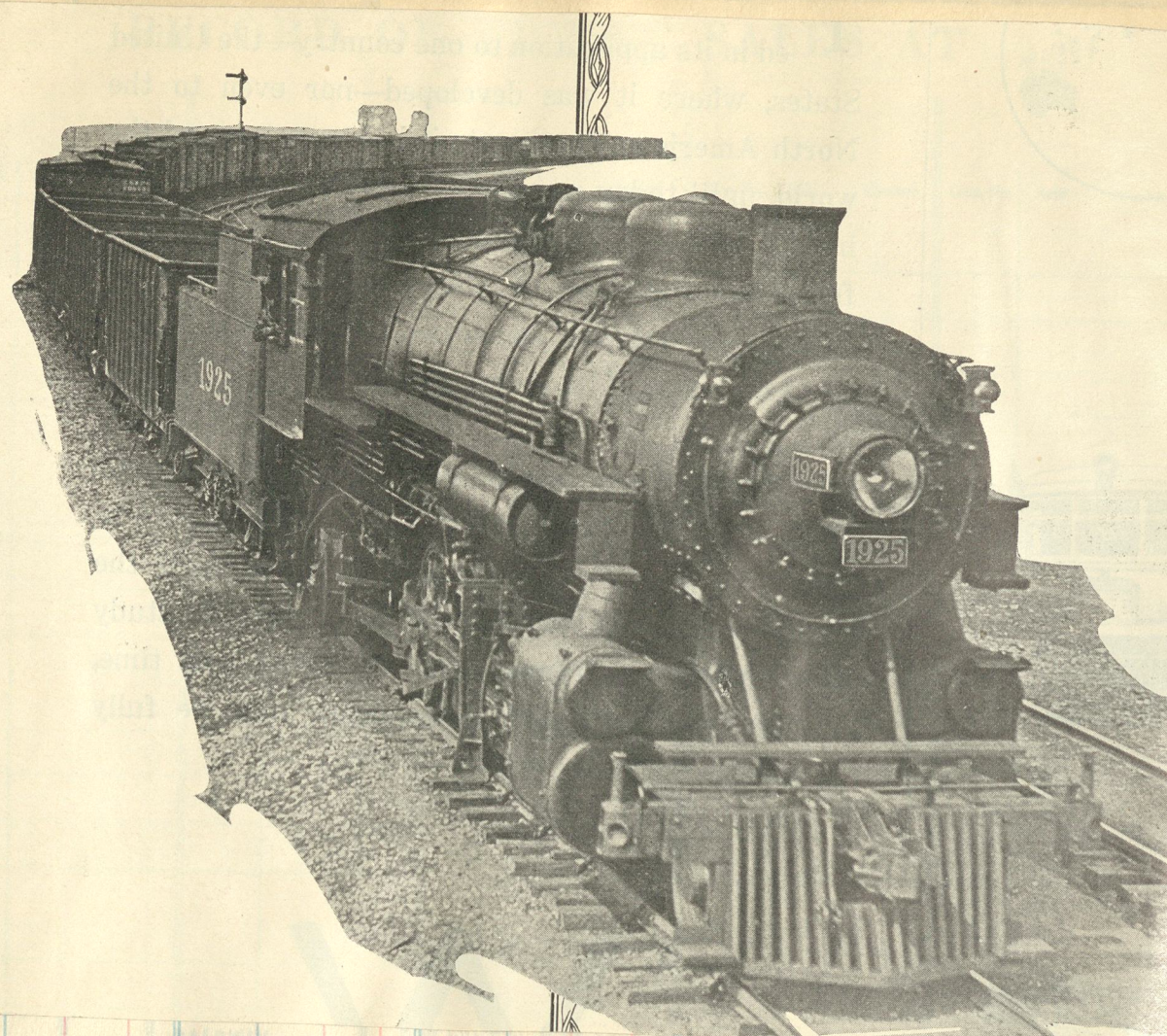
135

Jan 1944
103,901
Larkin
RR payrolls

SPEED TABLE

NOTE.—This table is for information only and does not authorize exceeding speed limitations of special instructions or however issued.

Time per Mile	Miles per Hour	Time per Mile	Miles per Hour	Time per Mile	Miles per Hour	Time per Mile	Miles per Hour
0 min. 36 sec.	100.00	1 min. 30 sec.	40.00	2 min. 24 sec.	25.00	3 min. 18 sec.	18.18
0 " 37 "	97.30	1 " 31 "	39.56	2 " 25 "	24.83	3 " 19 "	18.09
0 " 38 "	94.74	1 " 32 "	39.13	2 " 26 "	24.66	3 " 20 "	18.00
0 " 39 "	92.31	1 " 33 "	38.71	2 " 27 "	24.49	3 " 21 "	17.91
0 " 40 "	90.00	1 " 34 "	38.30	2 " 28 "	24.32	3 " 22 "	17.82
0 " 41 "	87.80	1 " 35 "	37.89	2 " 29 "	24.16	3 " 23 "	17.73
0 " 42 "	85.71	1 " 36 "	37.50	2 " 30 "	24.00	3 " 24 "	17.65
0 " 43 "	83.72	1 " 37 "	37.11	2 " 31 "	23.84	3 " 25 "	17.56
0 " 44 "	81.82	1 " 38 "	36.73	2 " 32 "	23.68	3 " 26 "	17.48
0 " 45 "	80.00	1 " 39 "	36.36	2 " 33 "	23.53	3 " 27 "	17.39
0 " 46 "	78.26	1 " 40 "	36.00	2 " 34 "	23.38	3 " 28 "	17.31
0 " 47 "	76.60	1 " 41 "	35.64	2 " 35 "	23.23	3 " 29 "	17.22
0 " 48 "	75.00	1 " 42 "	35.29	2 " 36 "	23.08	3 " 30 "	17.14
0 " 49 "	73.47	1 " 43 "	34.95	2 " 37 "	22.93	3 " 31 "	17.06
0 " 50 "	72.00	1 " 44 "	34.62	2 " 38 "	22.78	3 " 32 "	16.98
0 " 51 "	70.59	1 " 45 "	34.29	2 " 39 "	22.64	3 " 33 "	16.90
0 " 52 "	69.23	1 " 46 "	33.98	2 " 40 "	22.50	3 " 34 "	16.82
0 " 53 "	67.92	1 " 47 "	33.67	2 " 41 "	22.36	3 " 35 "	16.74
0 " 54 "	66.67	1 " 48 "	33.33	2 " 42 "	22.22	3 " 36 "	16.67
0 " 55 "	65.45	1 " 49 "	33.03	2 " 43 "	22.08	3 " 37 "	16.59
0 " 56 "	64.29	1 " 50 "	32.73	2 " 44 "	21.95	3 " 38 "	16.51
0 " 57 "	63.16	1 " 51 "	32.43	2 " 45 "	21.82	3 " 39 "	16.44
0 " 58 "	62.07	1 " 52 "	32.14	2 " 46 "	21.69	3 " 40 "	16.36
0 " 59 "	61.02	1 " 53 "	31.86	2 " 47 "	21.56	3 " 41 "	16.29
1 " 0 "	60.00	1 " 54 "	31.58	2 " 48 "	21.43	3 " 42 "	16.22
1 " 1 "	59.02	1 " 55 "	31.30	2 " 49 "	21.30	3 " 43 "	16.14
1 " 2 "	58.06	1 " 56 "	31.03	2 " 50 "	21.18	3 " 44 "	16.07
1 " 3 "	57.14	1 " 57 "	30.77	2 " 51 "	21.05	3 " 45 "	16.00
1 " 4 "	56.25	1 " 58 "	30.51	2 " 52 "	20.93	3 " 46 "	15.93
1 " 5 "	55.38	1 " 59 "	30.25	2 " 53 "	20.81	3 " 47 "	15.86
1 " 6 "	54.55	2 " 0 "	30.00	2 " 54 "	20.69	3 " 48 "	15.79
1 " 7 "	53.73	2 " 1 "	29.75	2 " 55 "	20.57	3 " 49 "	15.72
1 " 8 "	52.94	2 " 2 "	29.51	2 " 56 "	20.45	3 " 50 "	15.65
1 " 9 "	52.17	2 " 3 "	29.27	2 " 57 "	20.34	3 " 51 "	15.58
1 " 10 "	51.43	2 " 4 "	29.03	2 " 58 "	20.22	3 " 52 "	15.52
1 " 11 "	50.70	2 " 5 "	28.80	2 " 59 "	20.11	3 " 53 "	15.45
1 " 12 "	50.00	2 " 6 "	28.57	3 " 0 "	20.00	3 " 54 "	15.38
1 " 13 "	49.31	2 " 7 "	28.35	3 " 1 "	19.89	3 " 55 "	15.32
1 " 14 "	48.65	2 " 8 "	28.12	3 " 2 "	19.78	3 " 56 "	15.25
1 " 15 "	48.00	2 " 9 "	27.91	3 " 3 "	19.67	3 " 57 "	15.19
1 " 16 "	47.37	2 " 10 "	27.69	3 " 4 "	19.57	3 " 58 "	15.13
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1 " 18 "	46.15	2 " 12 "	27.27	3 " 6 "	19.35	4 " 0 "	15.00
1 " 19 "	45.57	2 " 13 "	27.07	3 " 7 "	19.25	4 " 1 "	14.94
1 " 20 "	45.00	2 " 14 "	26.87	3 " 8 "	19.15	4 " 2 "	14.88
1 " 21 "	44.44	2 " 15 "	26.67	3 " 9 "	19.05	4 " 3 "	14.82
1 " 22 "	43.90	2 " 16 "	26.47	3 " 10 "	18.95	4 " 4 "	14.76
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1 " 27 "	41.38	2 " 21 "	25.53	3 " 15 "	18.46	4 " 9 "	14.46
1 " 28 "	40.91	2 " 22 "	25.35	3 " 16 "	18.37	4 " 10 "	14.40
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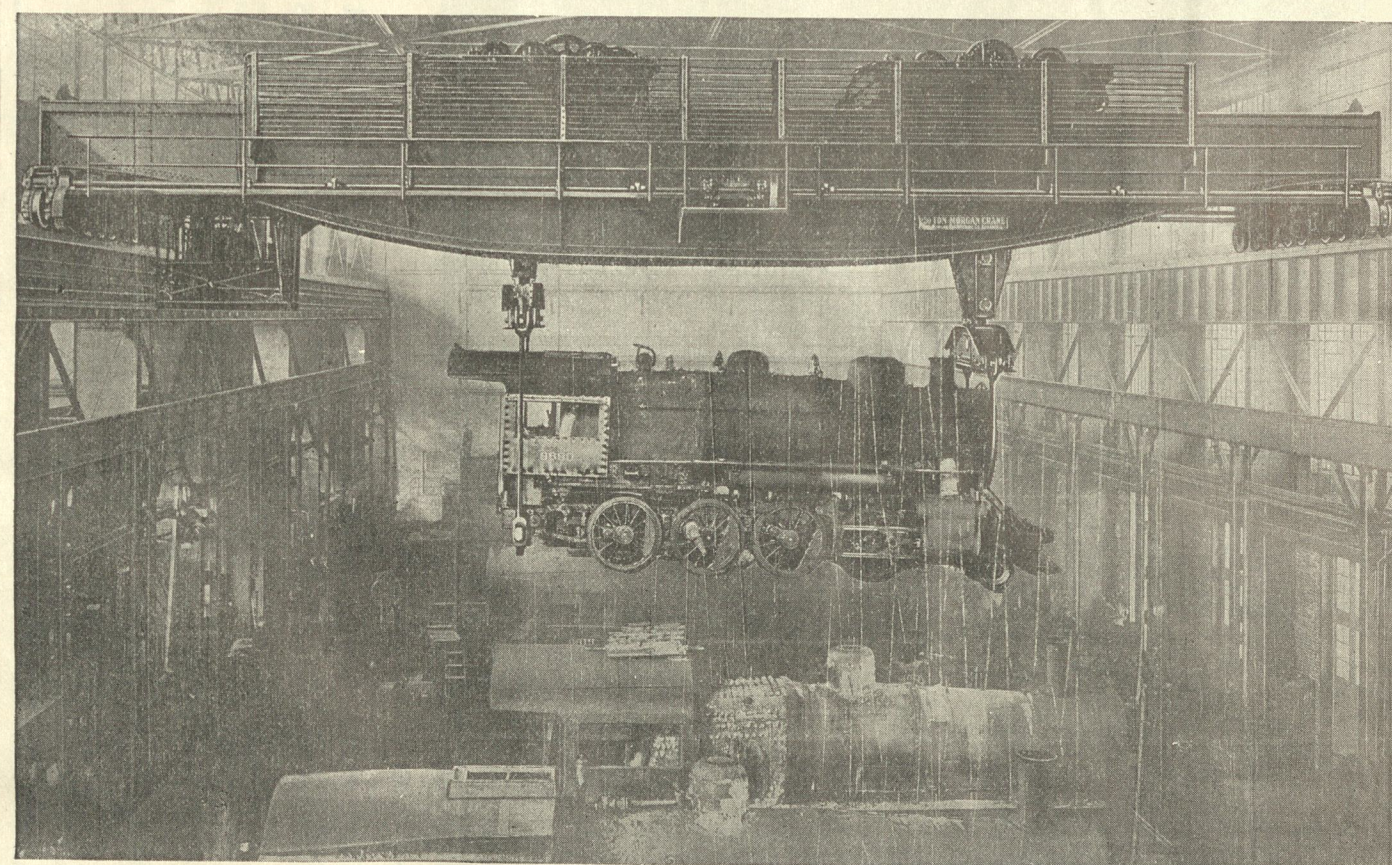


March 13, 1926

RAILWAY AGE

65

MORGAN



MORGAN 250 TON, 85' 10 3/4" SPAN CRANE AT THE PENNA. R.R. CO.'S LOGANSPOUT, IND., SHOPS

We furnished a duplicate of this crane to the above company's Columbus, Ohio, Shops. We have just furnished a 250 Ton, 71' 8" Span Crane for the Erie

R. R. Co.'s Hornell, N. Y., Shops, and a 150 Ton, 76' 0" Span Crane for the A. T. & S. Fe R. R. Co's Albuquerque, N. M. Shops.

QUALITY CRANES BACKED BY SERVICE

Back of every "Morgan" Crane is a complete engineering and manufacturing organization—an organization that has at its service the very latest and best of equipment—an organization that possesses a most enviable reputation for quality and service.

Every Morgan Crane is built to the standard of—not how cheap, but how good.

Morgan was the first, and is today the leading manufacturer of Electric Traveling Cranes, with more than 5000 cranes in successful operation.

The Morgan Engineering Co.
Alliance, Ohio

Chicago
122 So. Michigan Ave.

Designers, Manufacturers and Contractors
Electric Traveling Cranes, Rolling Mill Machinery
Ordinance, Steel, Shipbuilding and Forging Plants Complete
Rock Crushers, Special Machinery for Any Purpose

New York
120 Broadway
Pittsburgh
1420 Oliver Bldg.

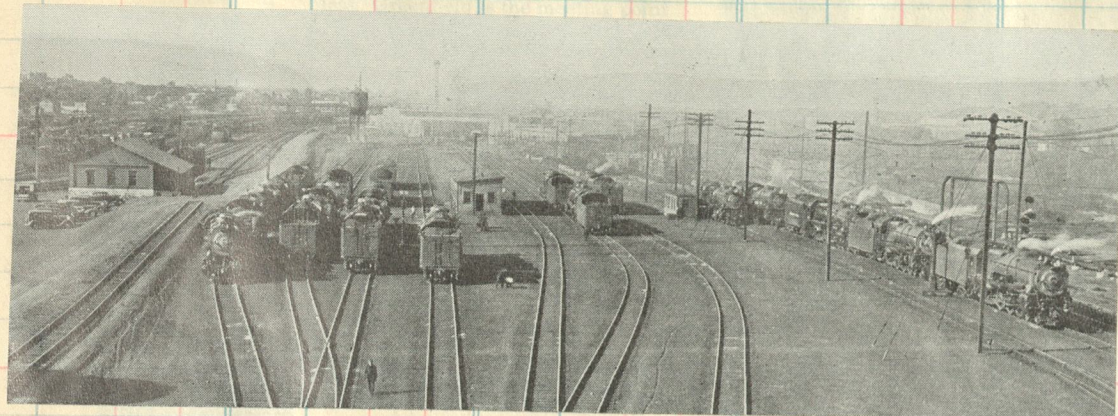
What was biggest in steam? Take your choice

RAILROAD	SERIES	WHEEL ARRANGEMENT	BOILER PRESSURE (LBS.)	DRIVERS (IN.)	WEIGHT ON DRIVERS (LBS.)	ENGINE WEIGHT (LBS.)	ENGINE & TENDER (LBS.)	CYLINDERS — DIAMETER X STROKE (IN.)	EVAPORATIVE SURFACE (SQ. FT.)	GRATE AREA (SQ. FT.)	FIREBOX, LENGTH & WIDTH (IN.)	TRACTIVE FORCE (LBS.)*	BUILDER AND DATE
Great Northern	2044-2059	2-8-8-2	240	63	544,000	630,750	1,003,530	28x32	7947	126	168x108	146,000	GN 1929-1930
Norfolk & Western	2171-2200	2-8-8-2	300	58	548,500	582,900	990,120	25&39x32(4)	5656	106.2	143 1/4 x 106 1/4	132,000 (C) 170,000 (S)	N&W 1948-1952
Duluth, Missabe & Iron Range	228-237	2-8-8-4	240	63	565,000	699,700	1,138,000	26x32	6758	125	210 1/8 x 102 1/4	140,000	Baldwin 1943
Northern Pacific	5001-5011	2-8-8-4	250	63	558,900	723,400	1,125,400	26x32	7666	182	266 1/4 x 114 1/4	140,000 153,300 (B)	Baldwin 1930
Union Pacific	4020-4024	4-8-8-4	300	68	545,200	772,250	1,208,750	23 3/4 x 32	5755	150.3	235 1/2 x 96 3/16	135,375	Alco 1944
Erie	Matt Shay	2-8-8-8-2	210	63	160,000	753,600	845,000	36x32(6)	6886	90	162x108	160,000	Baldwin 1914
Virginian	700	2-8-8-8-4	215	56	726,000	844,000	844,000	34&34x32(6)	8120	108.2	188x108 1/4	146,000	Baldwin 1916
Virginian	800-809	2-10-10-2	215	56	147,200	617,000	684,000	30&48x32	8606	108.7	181 1/16 x 108 1/4	147,200 (C) 176,000 (S)	Alco 1918

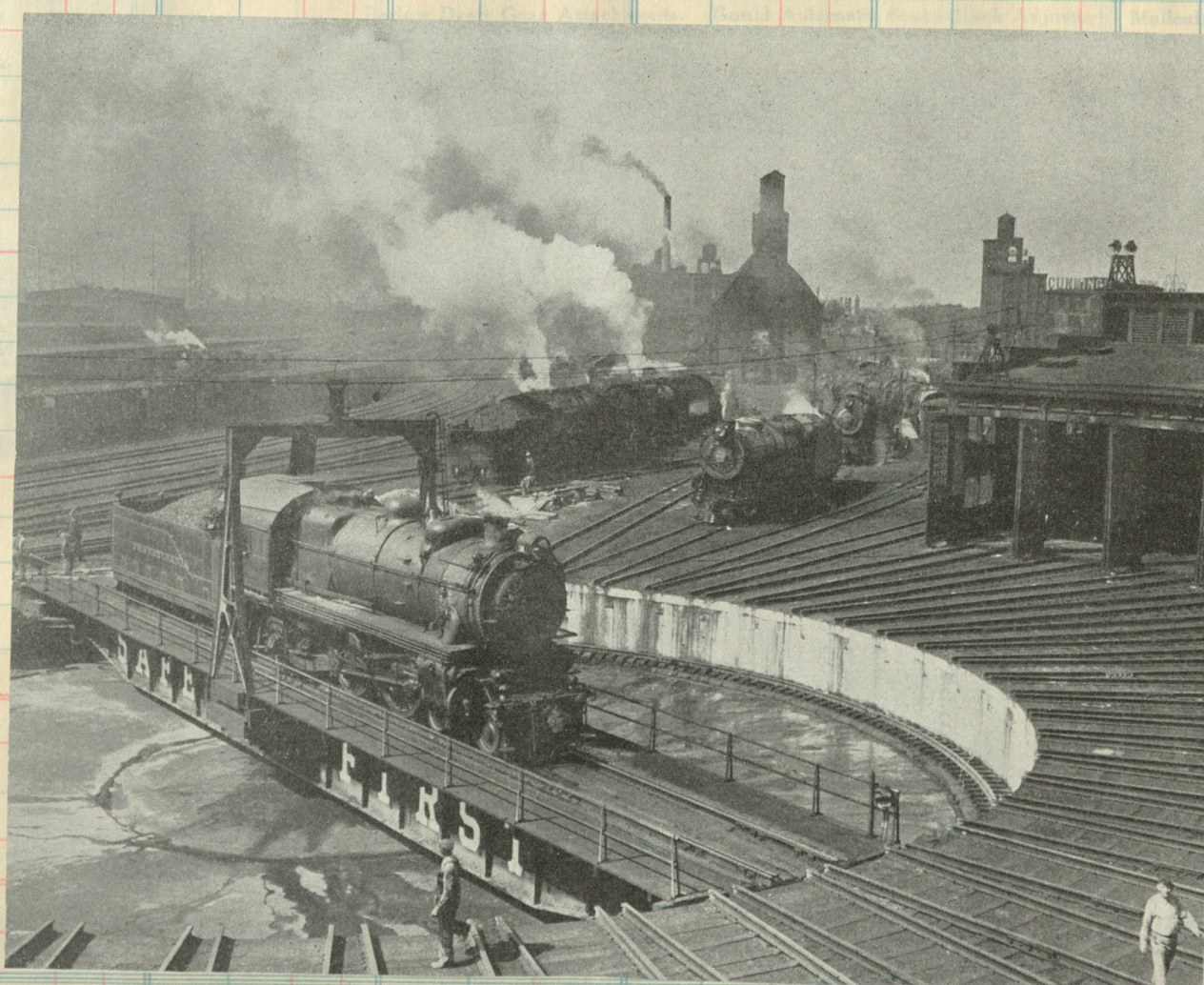
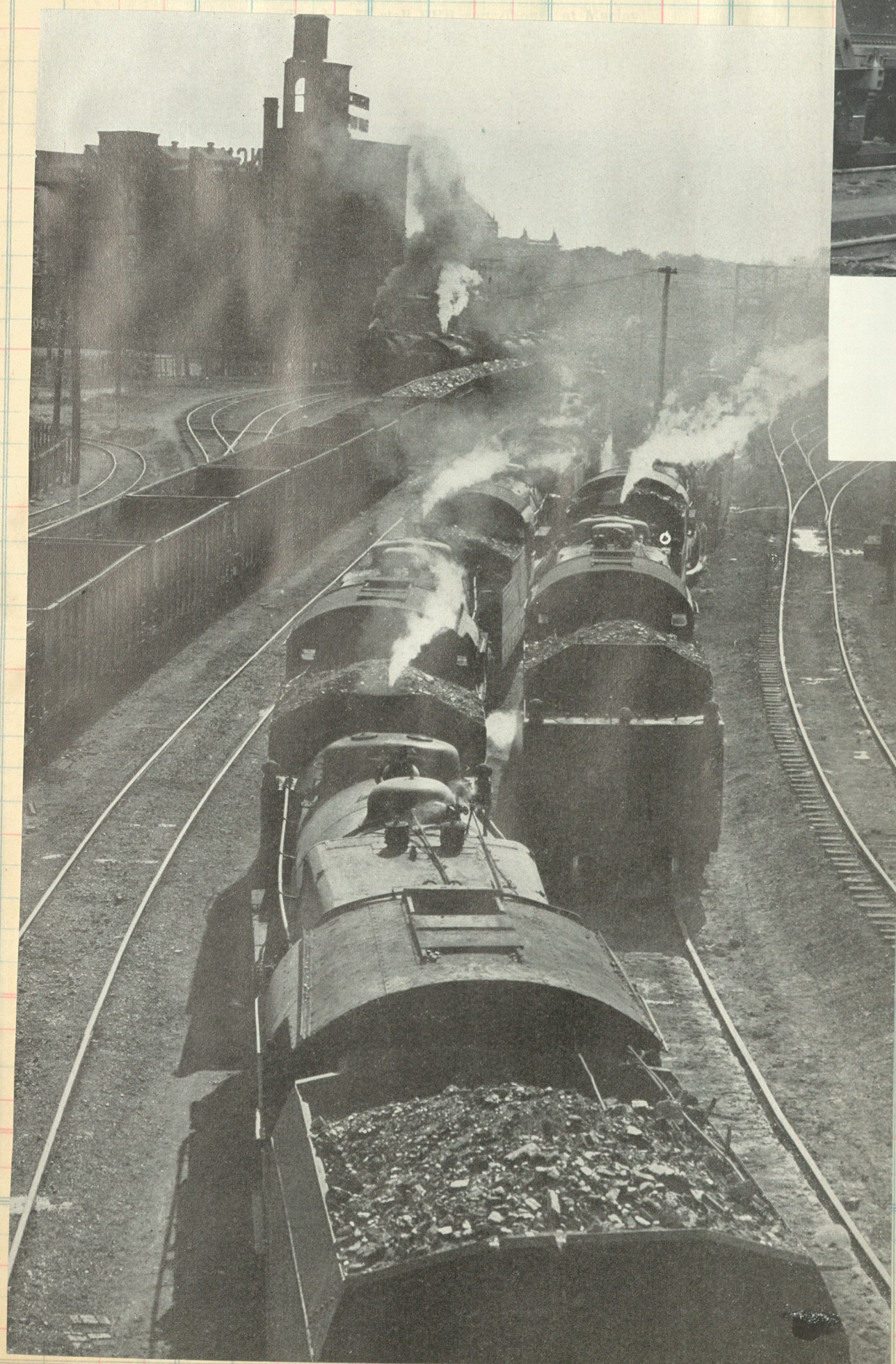
* S — simple. C — compound. B — with booster.

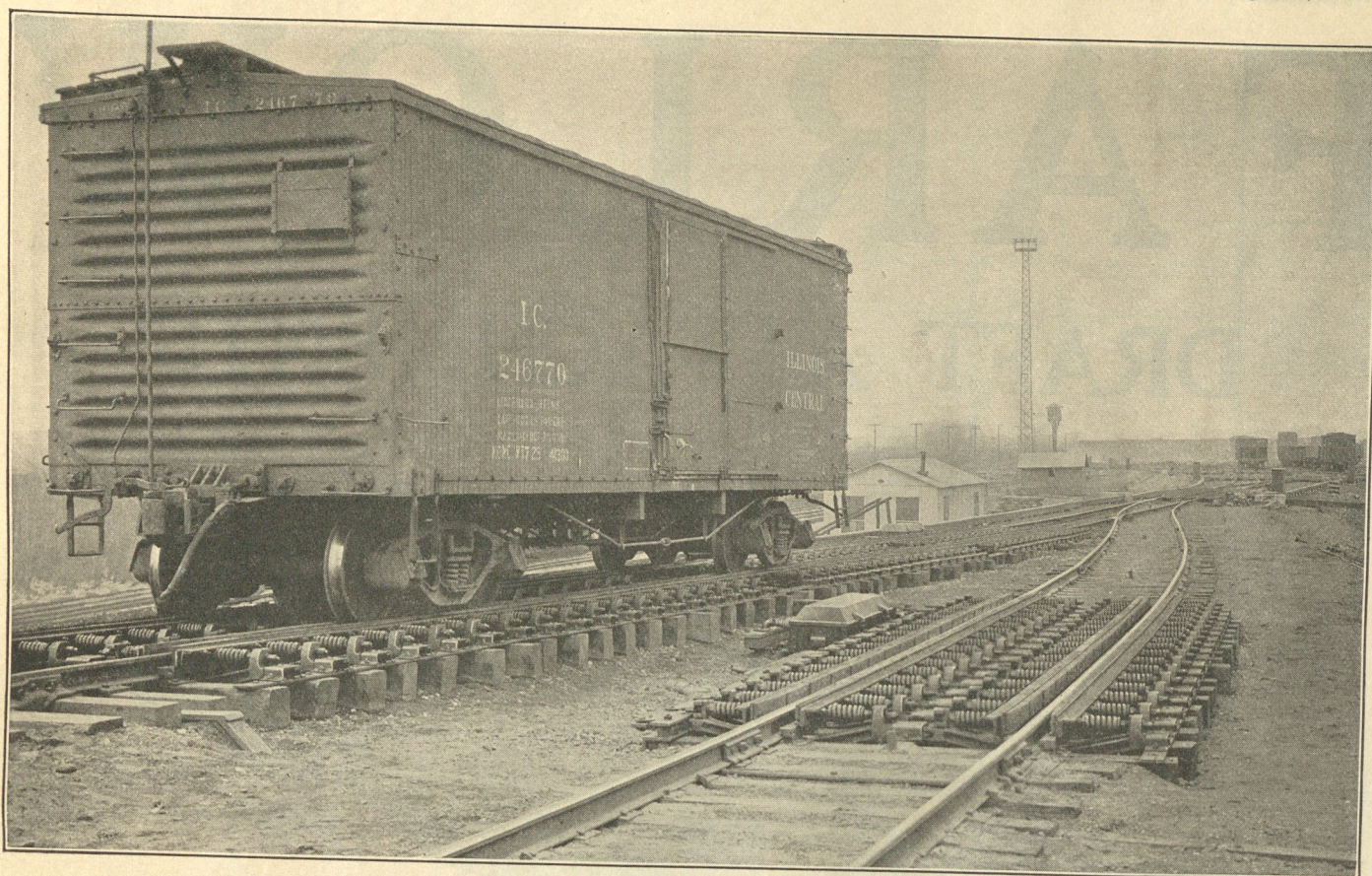
Clos. No.

The most magnetic location on any railroad property was the engine terminal. It was a spot of almost continuous activity with engines being being coaled and watered; engines moving on and off the turntable, being run in and taken out of the house all laced with the wonderful aroma of soft coal smoke. Then wander thru the engine house and closely inspect those magnificent, living machines. An experience that has passed on forever!



The yard tracks are wet from leaky injectors and fittings; the ties are greasy where exposed above clinkers, ash and cinders; there are many places to step in, or even fall into—always look, and remember to step over the rail. Below the towering coaling dock, chains rattle and chutes bang down with the tremendous clatter of coal tumbling into the tender. A bell, cylinder cocks, and another engine moves into line.





There is a profit in keeping Cars Moving Uniformly

The product of distance or transit is similar to the production of materials—in each case the result is speed multiplied by time. If the speed is uniformly high the result is ordinarily greater than if the speed were spasmodic.

It is the uniform speed of cars over the hump and onto classification tracks that results in greater capacity of the yard.

That is the function of the

G-R-S Car Retarder System

It keeps the cars moving uniformly. In this way the yard's capacity is increased.

This increased capacity is only *one* of the benefits derived. Large savings is another.

Are you interested?

GENERAL RAILWAY SIGNAL COMPANY

ROCHESTER, N.Y.

New York

Chicago

St. Louis

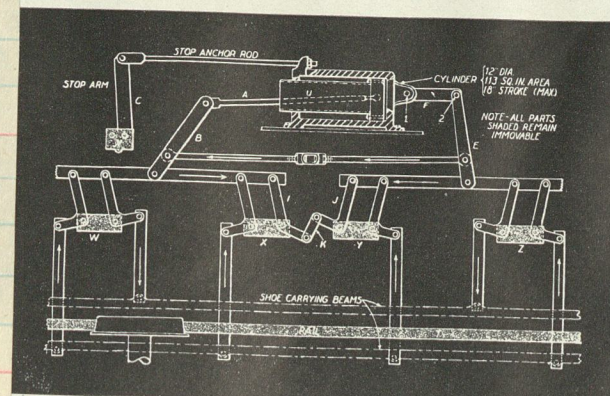
Montreal

Melbourne

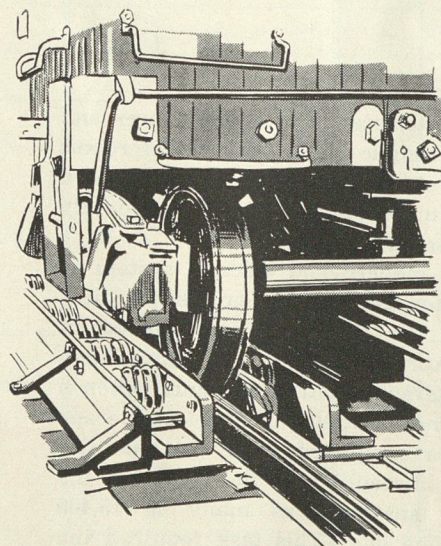
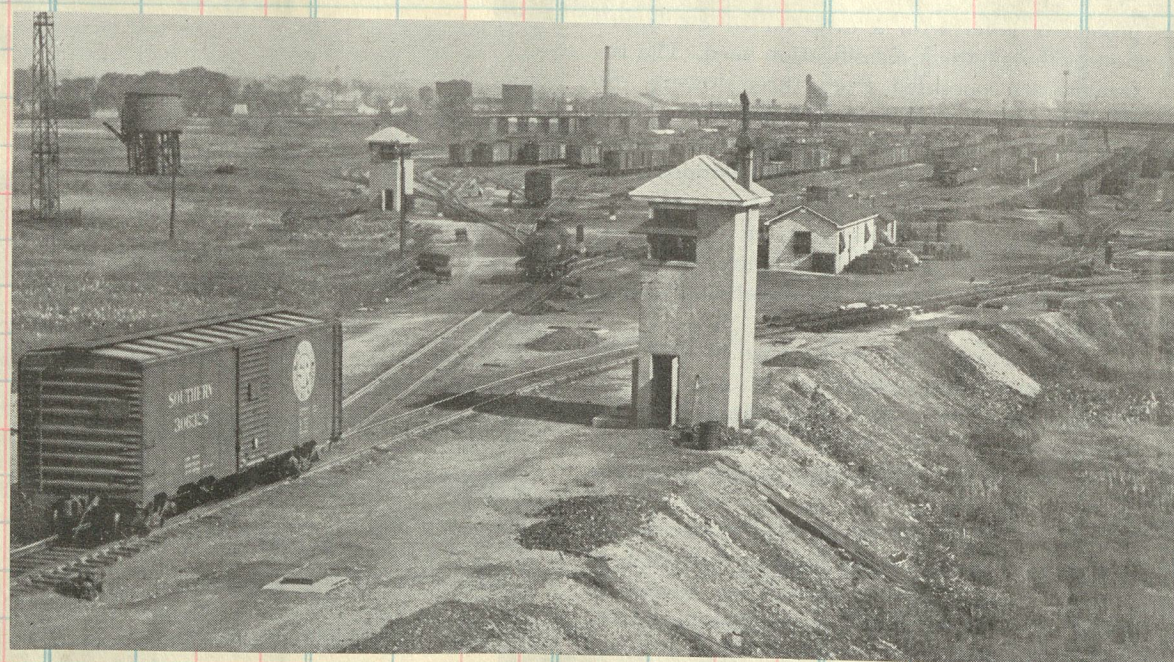
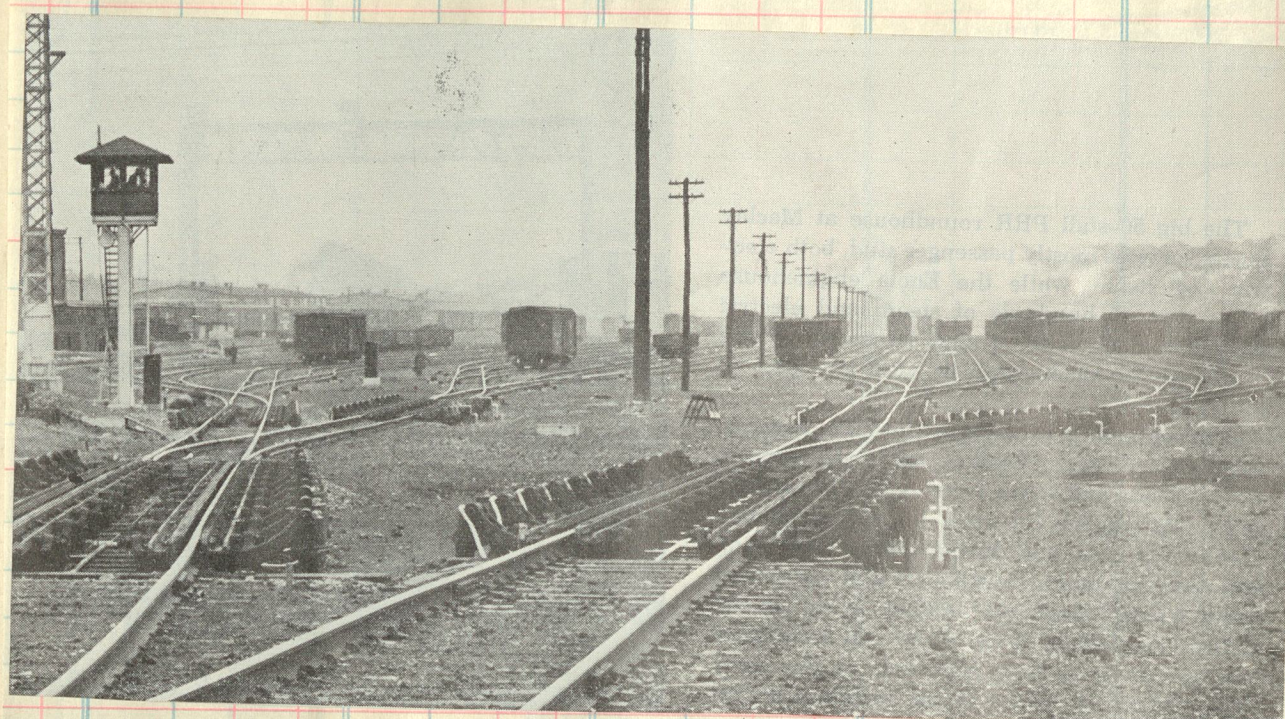
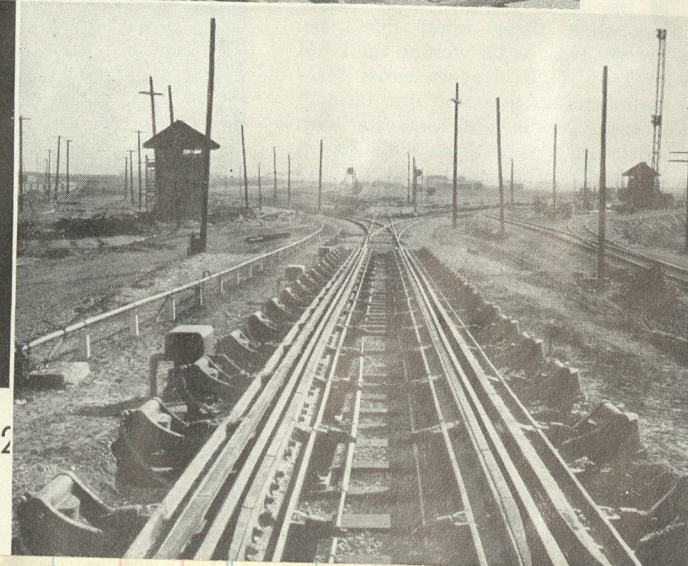
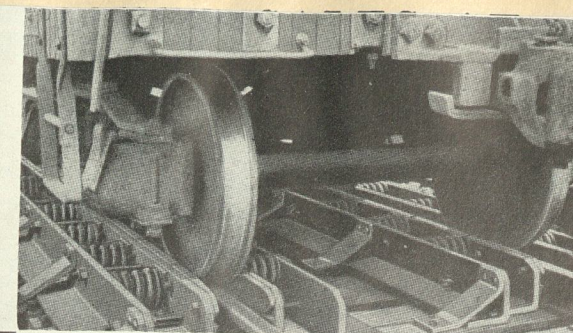
A593

How car retarder works.

The diagram below illustrates how, by means of a system of levers, the car retarder applies an equal pressure to each side of the wheel rim and thus slows the car. Cushions of either air or springs keep the pressure from becoming too rigid. The amount of grip is under control of the towerman, who has a car list showing weight of each car as well as the track to which it is to be switched.

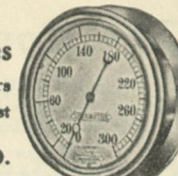


Diagram, Union Switch & Signal Co.; right, Burlington Route.



Clos. No. Sold

Ashton High Grade Pop Valves—Steam Gauges
the quality standard for over 40 years
Exclusive features insuring greatest efficiency and durability
THE ASHTON VALVE CO.
New York, Boston and Chicago



American Water Softener Company
Fairhill P. O. Station, Philadelphia, Pa.
SPECIALISTS FOR 20 YEARS IN RAILROAD WATER PURIFICATION

BUFFALO BRAKE BEAM CO.

Brake Beams, Auxiliary Supports, Adjusting Carriers and Guards for Brake Beams
NEW YORK AND BUFFALO

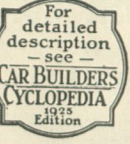
THE ELECTRO-MOTIVE CO.
GAS-ELECTRIC MOTOR CARS
LOCOMOTIVES
POWER PLANTS
CLEVELAND, OHIO
See two page advertisement in October 3rd issue.



Nichols Transfer Tables Turntable Tractors

Geo. P. Nichols & Bro. 2139 Fulton Street Chicago

Anti-Friction Car Supporting Means
THE WOODS
SIDE AND CENTER BEARINGS
EDWIN S. WOODS & COMPANY
Ill. Merchants Bk. Bldg. CHICAGO



ROLLED MANGANESE STEEL RAIL

Furnished in all standard sections
Effects great economy in maintenance on all curves for congested traffic
MANGANESE STEEL RAIL COMPANY
Sales Office HILLBURN NEW YORK



RICHARDSON AND ALLEN-RICHARDSON
BALANCED SLIDE VALVES
now used on 20,000 Locomotives
Send for Catalogue
H. G. HAMMETT, Locomotive Specialties TROY, N. Y.

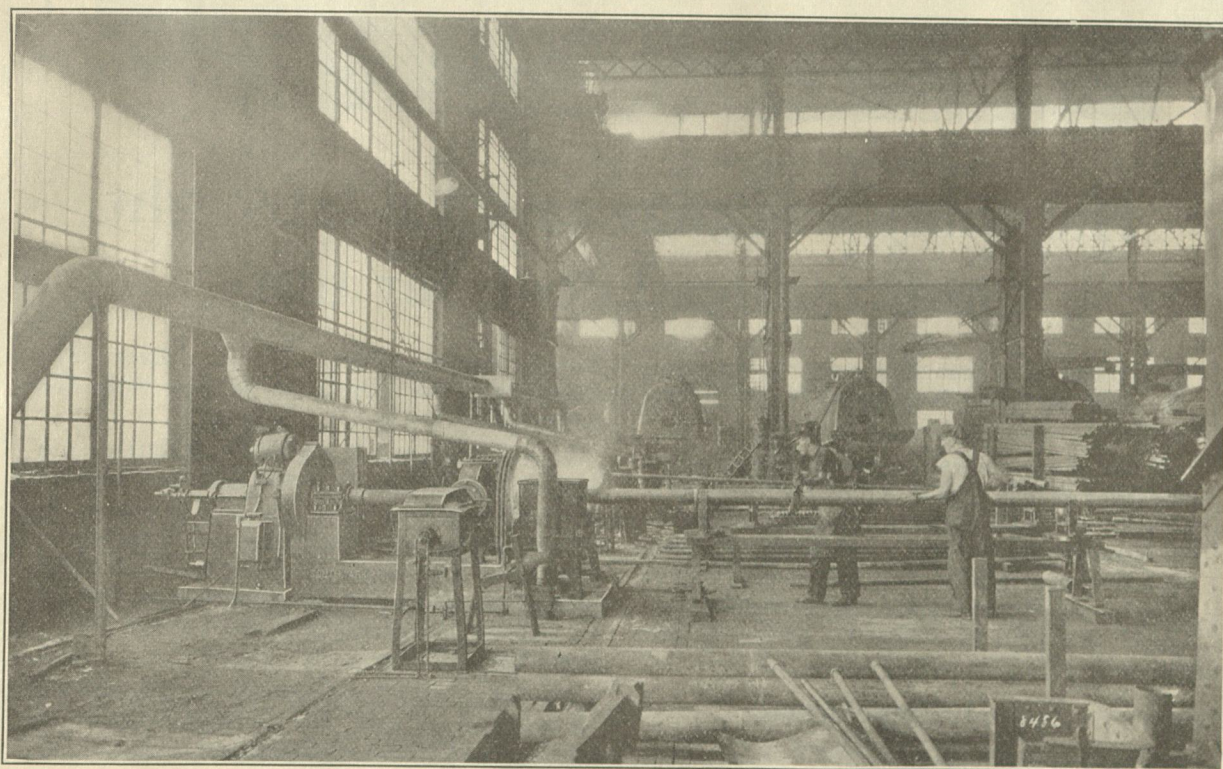
November 10, 1923

RAILWAY AGE

13

SOUTHWARK UNIVERSAL FLUE WELDERS

For longer safe ends, better flues and more economical welding



Southwark Flue Welders at the Baldwin Locomotive Works—Eddystone Plant.

*Southwark Equipment is Designed to Meet
All Requirements of the Modern
Railroad Shop*

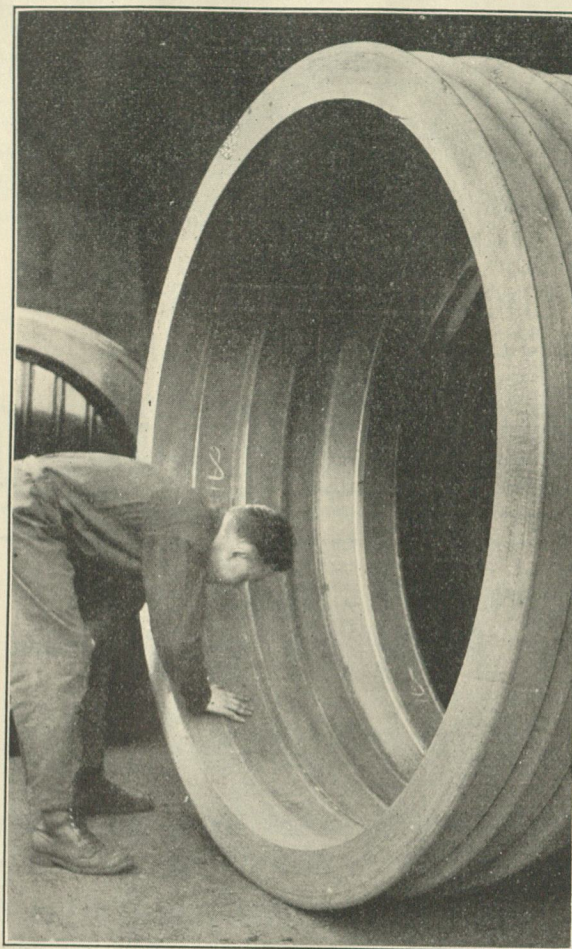
AMONG OUR EQUIPMENT FOR LOCOMOTIVE AND R.R. SHOPS—

Flanging Presses	Forging Presses	Hyd. and Power	Manhole Punches	Valves
Four-column	Boiler Riveters	Shears	Portable Riveters	Pipes
Sectional Flangers	Bending Rolls	Turret Rotary	Jib Cranes	Fittings
Bending Presses	Vertical and Horizontal	Angle Benders	Spring Machinery	Flue Welders
Bulldozers	Punches	Spring Banders	Jacks	Flue Testers
Bushing Presses	Hyd. and Power	Upsetting Presses	Hyd. Pumps	Washer Making Presses
Wheel Presses	Shears	Shaft Straighteners	Accumulators	Etc., Etc.

SOUTHWARK
FOUNDRY AND MACHINE CO.
ESTABLISHED 1836
PHILADELPHIA, PA.

MIDVALE

LOCOMOTIVE TIRES



THOUSANDS of these tires on repeat orders from satisfied customers testify to the superiority of MIDVALE TIRES for Locomotives.

Midvale tires are backed by fifty years of experience in their manufacture.

HIGH SPEED TOOL STEEL
LOCOMOTIVE AXLES—CRANK PINS—PISTON RODS

THE MIDVALE COMPANY

WORKS AND MAIN OFFICE:

NICETOWN, PHILADELPHIA

DISTRICT OFFICES:

NEW YORK 165 Broadway	PITTSBURGH Grant & 5th Ave.	WASHINGTON 15th & H Sts., N. W.	CLEVELAND 925 Euclid Ave.	CHICAGO 332 S. Michigan Ave.	SAN FRANCISCO 681 Market St.
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PHILADELPHIA

TOOL AND ALLOY STEEL WAREHOUSES:
CLEVELAND CHICAGO

SAN FRANCISCO

66

RAILWAY AGE

December 12, 1925

KASS SAFETY TREADS

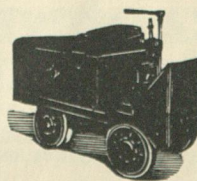
Lowest in Cost, Lightest in Weight,
Highest in Efficiency

MORTON MANUFACTURING COMPANY
CHICAGO

ELWELL-PARKER

Electric
TRUCKS AND TRACTORS
Platform, Lift, Elevator, Crane and 3 or 4 Wheel Tractors for Shop, Freight and Passenger Terminal.

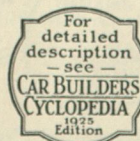
The Elwell-Parker Electric Co.
"Pioneer Builders Electric Industrial Trucks"
Cleveland, Ohio, U. S. A.
Offices in All Principal Cities



PASSENGER CAR SPECIALTIES

Two Flexolith Composition Flooring, Two National Standard Roofing, Two National and Universal Steel Trap Doors, Two Trap Door Locks, Two Tucork Mineral Insulation, Two Resisto Quilt Hairfelt Insulation, Two Steel Preservative, Two Imperial and Universal Car Window Screens, Two Brown Weather Strips, Two Metallic Steel Sheathing.

TUCO PRODUCTS CORPORATION
30 Church Street
Chicago
Boston Dallas San Francisco Washington, D. C. Houston Montreal

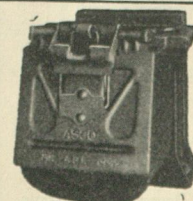


MISSISSIPPI WIRE GLASS CO.

220 Fifth Ave., New York

Manufacturers of Rolled Sheet Glass for Skylights and Windows.
Special Designs Increasing Daylight Illumination.

Write for Catalogue and Samples



Fewer hot boxes—less wear on journals—labor costs reduced—seals all four sides—roller bearing eliminates wear—applied in 10 seconds—self fitting—these are some of the advantages of ASCO Torsion Spring Journal Box Lids.

Allegheny Steel Company
Brackenridge Pennsylvania U.S.A.

American Mason Safety Tread Co.

100 PERRY STREET, LOWELL, MASS.

Mason Safety Tread
Stanwood Step and Tread

Stair Nosings
Karbolith Flooring



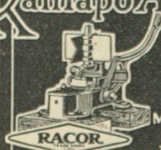
Long-Bell

Douglas Fir Lumber and Timbers; Southern Pine Lumber and Timbers; Croscott Lumber, Timbers, Posts, Poles, Ties, Guard-Rail Posts, Piling; Southern Hardwood Lumber and Timbers; Oak Flooring; California White Pine Lumber; Sash and Doors; Box Shooks.

THE LONG-BELL LUMBER COMPANY
R. A. Long Building Lumbermen since 1875 Kansas City, Mo.

SEVEN WORKS Ramapo Ajax Corporation

RAMAPO-AJAX-ELLIOT
HILLBURN, NEW YORK
NIAGARA FALLS, N.Y.
CHICAGO, ILLINOIS
EAST ST. LOUIS, ILL.
PUEBLO, COLORADO
SUPERIOR, WISCONSIN
NIAGARA FALLS, ONT.
CANADA



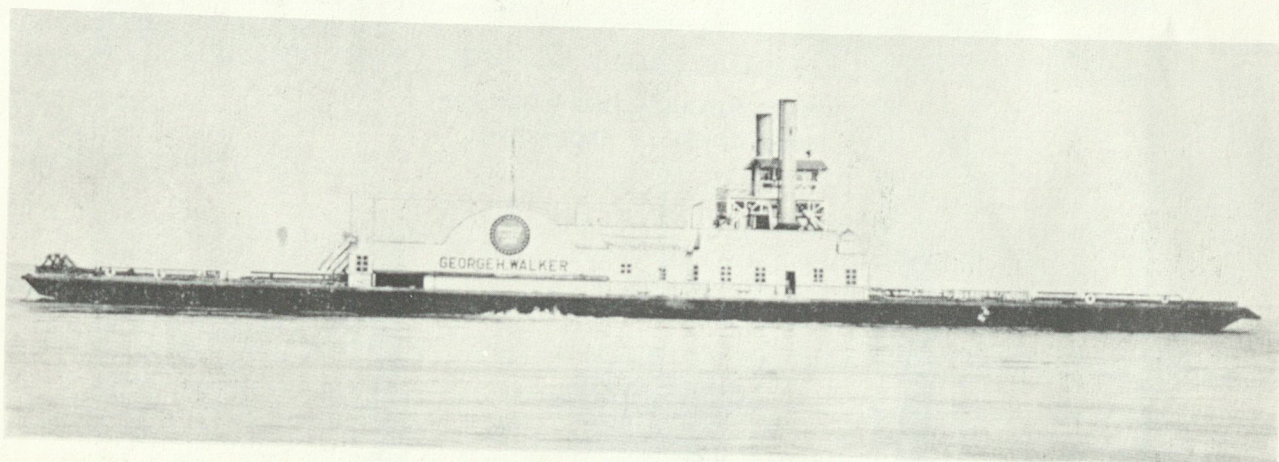
RAILWAY TRACK MATERIAL
Switch Stands, Frogs,
Switches, Crossings,
Guard Rails, Clamps, Etc.
for steam, mine and
industrial railway tracks
MANGANESE WORK A SPECIALTY
SALES OFFICES AT ALL WORKS
Main Office, HILLBURN, N.Y.

UNUSUAL OFFERING

RAILROAD TRANSFER STEAMER

"GEORGE H. WALKER"

USED FOR TRANSFERRING PASSENGER AND FREIGHT TRAINS
ACROSS THE MISSISSIPPI RIVER



SPECIFICATIONS

STEEL HULL... SIDE WHEELS... OIL FIRED BOILERS
THREE TRACKS, CAPACITY 20 FREIGHT OR 11 PASSENGER CARS

HULL—STEEL RIVETED		ENGINES—HORIZONTAL		FUEL OIL STORAGE COMPART-
LENGTH—MOULDED	340'	CYLINDERS 17" x 36"		MENTS—2
LENGTH—OVERALL	345'9"	HORSEPOWER 600		CAPACITY 42,000 GAL. TOTAL
BREADTH—MOULDED	53'8"			
BREADTH—OVER GUARDS	91'	BOILERS—FOUR 72" x 18'		TONNAGE—GROSS
DEPTH—MOULDED	11'	BRONSON TYPE, COM-		NET
DEPTH—LIGHT	5'4"	BINED FIRE & WATER		
DRAFT—LOADED	10'4"	TUBE		
RISE OF DECK	8"	1702 H. P. (TOTAL)		PUMPS, ELECTRIC GENERATORS, SWITCH BOARD, ETC.

CAN BE CONVERTED TO OTHER USES

IMMEDIATELY AVAILABLE — LOCATED IN NEW ORLEANS, LA.

Write—Wire or Phone

EQUITABLE EQUIPMENT CO., Inc.

Machinery . . Locomotives . . Rails . . Cars
Welded Steel Products
Boats . . Barges . . Tugs

410 CAMP STREET NEW ORLEANS, LA.

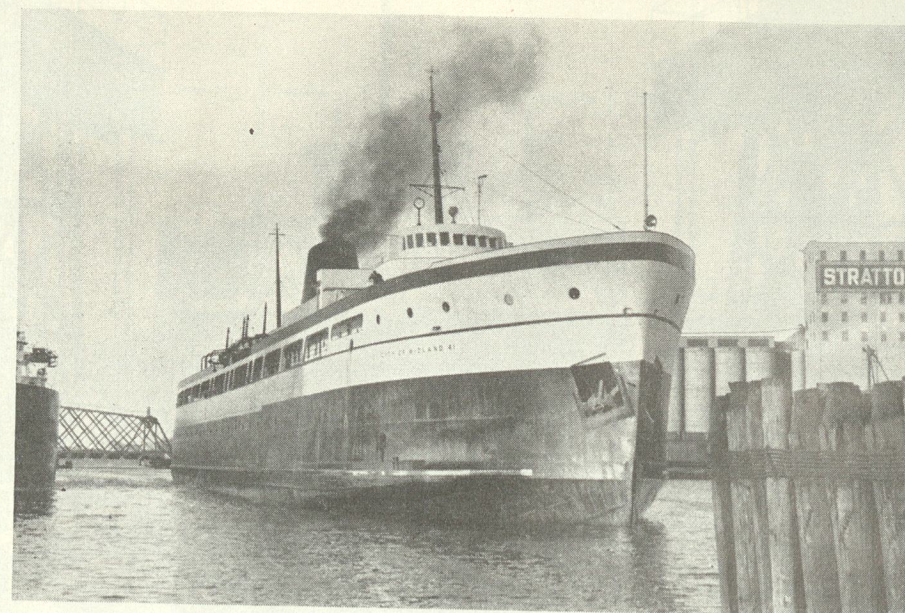
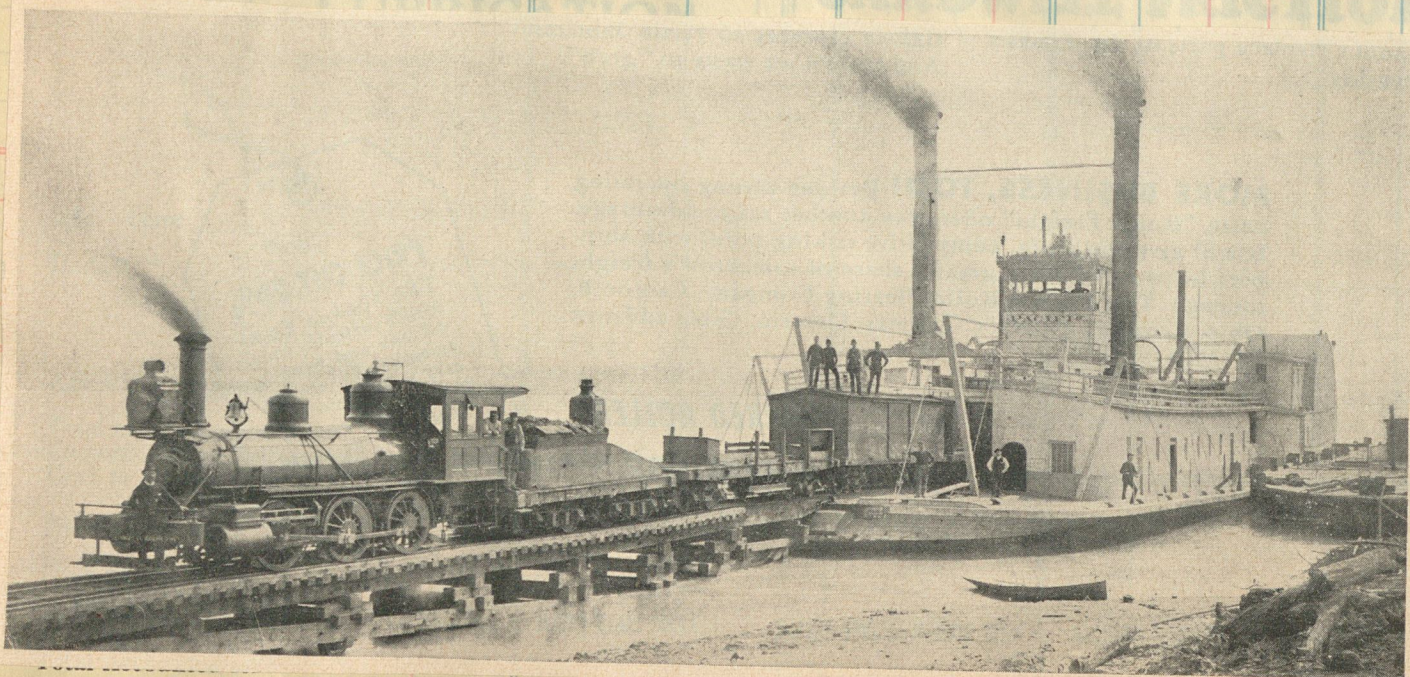
SD-149

This ad is quite out dated & shows a good deal
about the George H. Walker. MoPac RR files

PAGE 1

140. How much floating equipment do
the railroads operate?

At the beginning of 1939 the railroads of the
United States had in service 1,989 steamboats, tug-
boats, barges, car floats, ferries and other units of
floating equipment.



The 8200-ton City of Midland, one of the largest and newest car ferries on the lake, arrives Milwaukee. Swing bridge in background carries C&NW main line to Chicago. A floating apron between ship and dock is a safeguard when swells and waves raise and lower ferry as cars are moved on or off. Note here the guard rails and the flexible lock between ship and apron.

tive. Below, the Eureka, on its last day, passes the bridge that put it out of business. The ferry was built in 1890 for the SF&NP as a combination car and passenger boat. It was rebuilt in 1922 to handle a capacity of 2300 commuters.



PASSENGER train is pulled off the landing stage at Port Costa in sections. Note fire-fighting equipment on switcher tank

Railroad Routes of 1835

To the Editor:

Handed down to me from my Grandfather, I have a little book entitled "The Tourist in 1835," published by Harper & Brothers.

There are five routes or "tours" explained and described in detail. Not only referring to the use of railroads in those days and other methods of transportation, the author gave complete details about each city visited on the way, special points of interest, and the distances between each one.

I thought the following excerpts from this book, and the list of "Railroads in the United States" might prove interesting to the readers.

The book is divided into the five routes beginning with: "ROUTE FROM PHILADELPHIA TO NEW YORK—at Bordentown: A handsome village, situated on an elevated bank. Here the passengers take cars on the Camden and Amboy Railroad, and after proceeding a short distance, the seat and residence of the Ex-king of Spain, Joseph Bonaparte, who now styles himself the Count de Surville is seen on the left. Passing on through several small towns, the car arrives at South Amboy, the terminating

point of the railroad, which is 35 miles in length.

"ROUTE FROM NEW YORK TO ALBANY—by steamboat up the Hudson.

"WESTERN ROUTE FROM ALBANY—The traveller may take the Mohawk and Hudson Railroad from 115 State Street, and be whirled across 'by steam' or take the stage to Schenectady. The Schenectady and Saratoga Railroad here commences, from the construction of which, the villages of Ballston Spa, and Saratoga Springs derive almost incalculable advantages. The cost of the road, which is 21½ miles in length, carriages, etc., was about \$270,000.

"AT CANAJOHARIE (which signifies in the Indian tongue Boiling Pot), 38 miles from Schenectady. The canal runs through the northern section of this village, and a bridge crosses the river to Palatine. This will be the terminating point of the projected Catskill and Canajoharie Railroad.

"AT ROCHESTER: A railroad leads from this city to the steamboat landing.

"ROUTE FROM ALBANY TO BALLSTON & SARATOGA SPRINGS—Since the completion of the railroads, nearly all travellers to Ballston and Saratoga go by way of Schenectady, where they

change cars and proceed direct to the Springs, by the Schenectady and Saratoga Railroad. It is 36½ miles by railroad, and considerably the most expeditious route; however, some persons, who travel for information as well as pleasure, still prefer the old route.

"AT TROY: A canal packet-boat leaves here daily at 9 o'clock for Whitehall, and runs through in about 22 hours. A railroad is being built to connect it with Ballston Spa.

"ROUTE FROM ALBANY TO BUFFALO—Leaving Albany, the direct mode of proceeding is by railroad to Schenectady; but the Rensselaer and Saratoga railroad will be completed in all the month of July, and then the general route will probably be by way of Troy and the Springs. From the Springs the traveller will pursue his journey to Buffalo by taking the railroad car for Schenectady, and there he takes his seat in the stage-coach. (Foot-note: The contractors are actively engaged in the construction of the railroad from Schenectady to Utica, as will be seen, and it will be finished in the autumn of 1836.)"

The table printed below is of proposed railroads, and those already in existence at the time the book was written:

M. F. SMITH, Div. 357,
17611 Franklin Blvd.,
Lakewood, Ohio.



RAILROADS IN THE UNITED STATES IN 1835

Names	Beginning	Termination	Miles	Year Commenced	Year Completed
Mohawk and Hudson	Albany	Schenectady	16	1829	1831
Saratoga and Schenectady	Schenectady	Saratoga Springs	20	1831	1832
Ithaca and Owego	Ithaca	Owego	29	1833	not yet
Harlaem	New York	Harlaem	7	1832	"
Catskill and Canajoharie	Catskill	Canajoharie	70	"	"
New York and Erie	New York	Lake Erie	400	not yet	"
Albany and Utica	Schenectady	Utica	80	"	"
Camden and Amboy	South Amboy	Bordentown	35	1831	1833
Paterson and Hudson	Jersey City	Paterson	14	"	"
Baltimore and Ohio	Baltimore	Pittsburgh	325	1828	not yet
Baltimore and Susquehanna	Baltimore	York, Pa.	76	1830	"
Baltimore and Washington	Baltimore	Washington	38	not yet	"
Quincy	Near Boston	Quincy Quarry	4	1826	1827
Boston and Lowell	Boston	Lowell	25	1831	1834
Boston and Worcester	Boston	Worcester	43	"	"
Boston and Providence	Boston	Providence	40	"	"
Columbia and Philadelphia	Philadelphia	Columbia	81	"	"
Germantown	Philadelphia	Norristown	18	1832	1832
Harrisburgh and Chambersburgh	Harrisburgh	Chambersburgh	48	"	"
Philadelphia and Trenton	Philadelphia	Trenton	27	1833	1833
Mauch Chunk	Mauch Chunk	Lehigh River	14	1827	1827
Manchester	Manchester	Coal Mines	13	"	"
Newcastle and Frenchtown	New Castle	Frenchtown	.....	1831	1833

There are, besides, several others of minor importance now constructing in different sections of the United States.

May 1933
c/n 4163

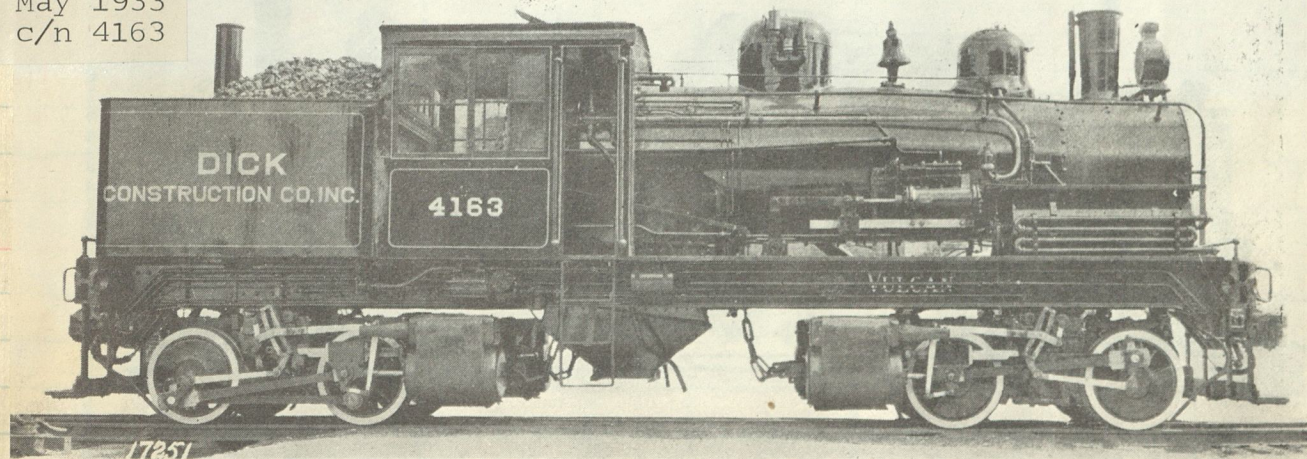


Fig. 2127—Vulcan Duplex Steam Locomotive. Built for the Dick Construction Company, Inc. by the Vulcan Iron Works.
(See also Page 955)

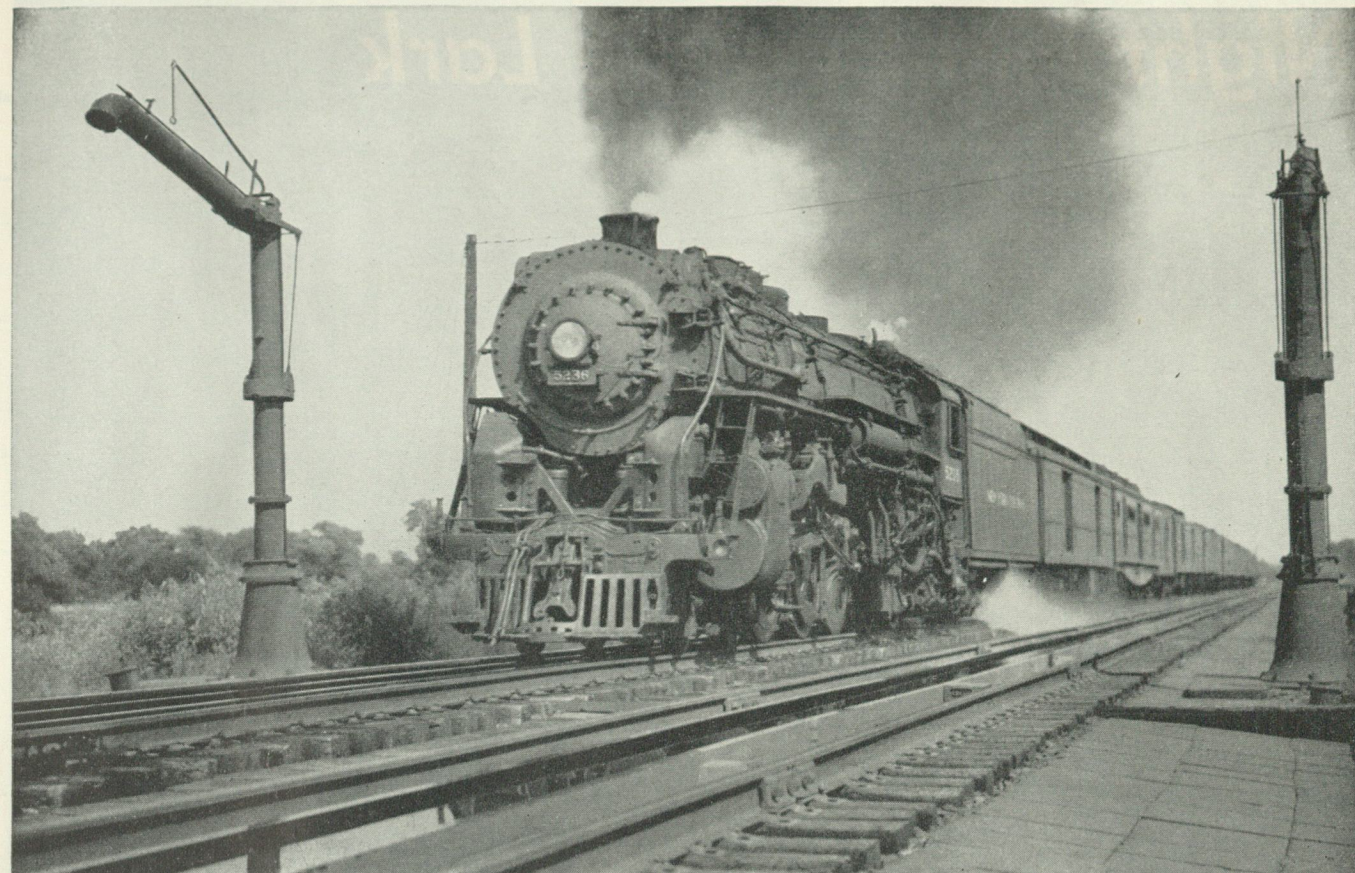
Gage.....	4 ft. 8½ in.	Driving wheel base.....	5 ft. 0 in.
Cylinders (4).....	13 in. x 16 in.	Heating surface, tubes.....	780 sq. ft.
Steam pressure.....	200 lb.	Heating surface, fire-ox.....	75 sq. ft.
Diameter of drivers.....	33 in.	Heating surface, total.....	855 sq. ft.
Tractive force.....	27,860 lb.	Grate area.....	17.8 sq. ft.

SLOW DOWN
look both ways and listen at every railroad crossing.
The train has the right of way.
SAFETY FIRST!

TRAIN THE MIND to MIND THE TRAIN
CROSS CROSSINGS CAUTIOUSLY



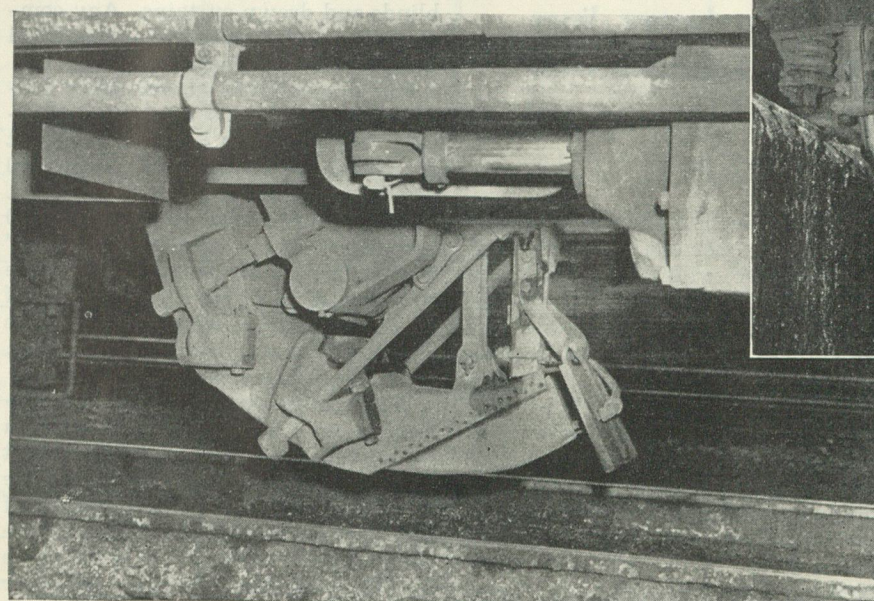
HATTIE MESSERSMITH'S brand new Buick got demolished when she forgot to look both ways at a crossing.



Richard J. Cook.

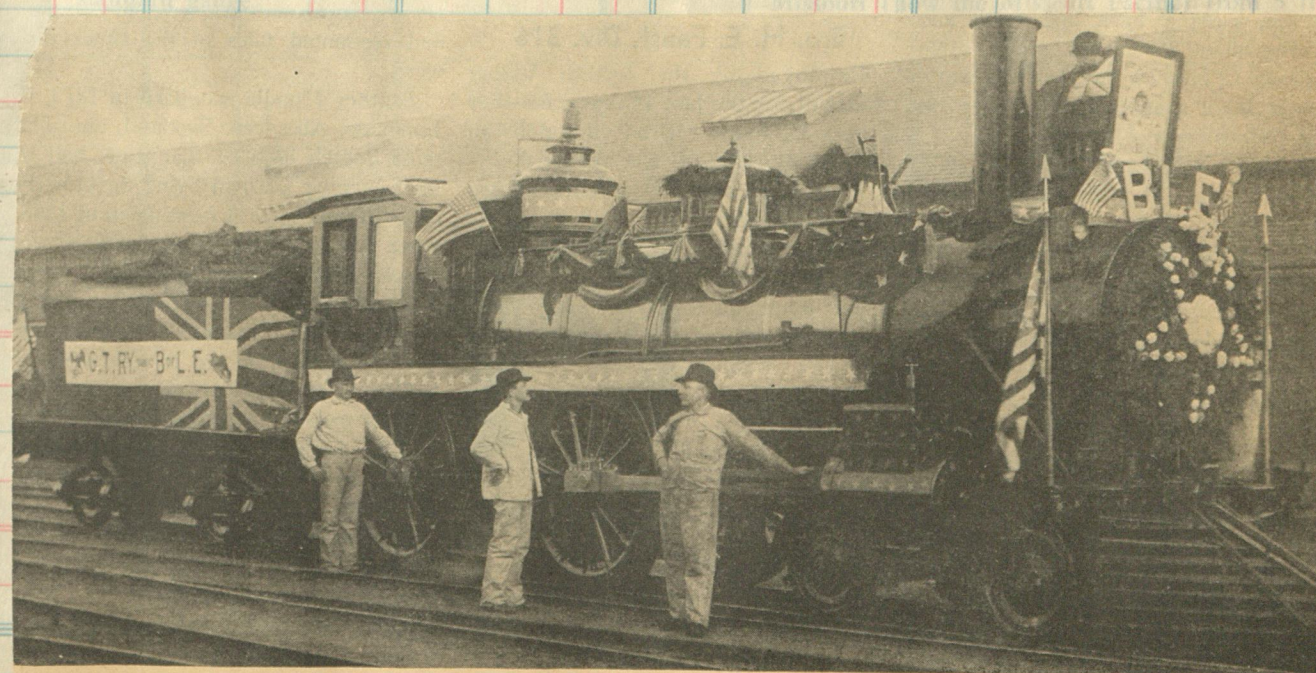
WATER ON THE FLY

New York Central's westbound mail loses not a mile an hour of speed as Hudson No. 5236⁷ scoops water from the Huron, O., trackpans. Invented by and first used on the London & North Western (1857) in England, track pans or troughs are notably efficient devices used by several eastern carriers. The list includes Pennsylvania, Baltimore & Ohio, Reading, and NYC, among others. First American installation was in 1870 in New York.



Closeup views of the scoop itself, this one built by the A. M. Byers Company. As the tender passes over the pans, the scoop is lowered by a compressed air control, located in the cab. Thanks to modern refinements, water can now be scooped at 80 miles an hour without excessive spillage or wayside damage.

Photo section 39



DECORATED FOR RUN TO B. OF L. E. MEETING, 1886

The International Tie

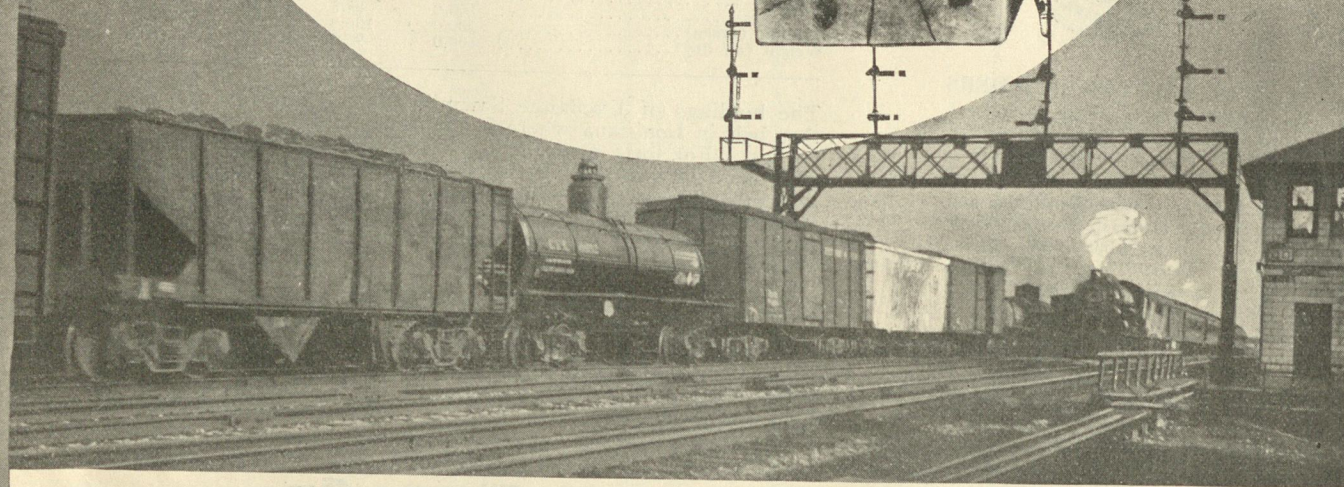
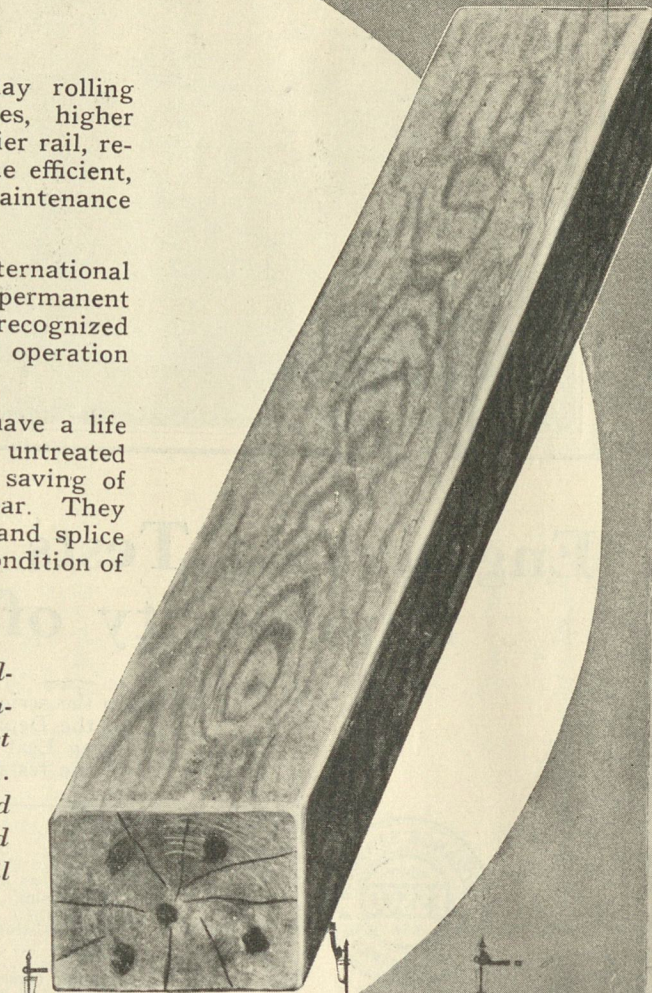
The Foundation of Good Service

THE enormous present day rolling loads, heavier locomotives, higher capacity freight cars and heavier rail, require sound treated ties for the efficient, economical and permanent maintenance of modern railroad track.

Well preserved ties like International Treated Ties are regarded as permanent materials of construction, and recognized as necessary to the economical operation of railways.

International Treated Ties have a life of two or more times that of untreated ties, which means an average saving of ten cents or more per tie per year. They also help to protect rail ends and splice bars and improve the general condition of the track.

International Ties are always sound, quality ties inspected and graded in strict accordance with A. R. E. A. specifications, carefully and accurately seasoned and treated with pure creosote oil or zinc chloride.



International Creosoting & Construction Co.

General Office—Galveston, Tex.

Plants: Texarkana, Texas

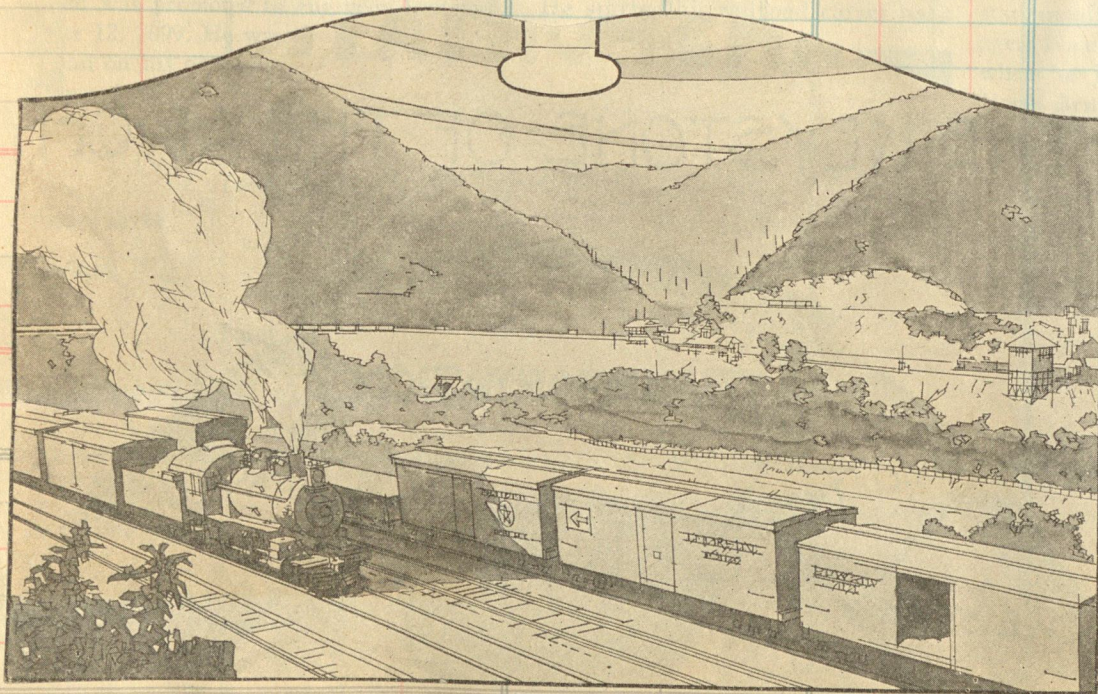
Beaumont, Texas

Galveston, Texas

The cost varies in different parts of the country, depending on kind of wood, distance hauled before being placed in the track and whether treated or untreated. The average treated cross-tie cost the railroads \$1.27 in 1938; the average untreated cross-tie cost 76 cents.

34. How many cross-ties do the railroads install in a year?

The railroads of the United States install about 50,000,000 cross-ties a year, on the average. Approximately 80 per cent of the cross-ties installed in replacements in recent years have been treated.



Consider the advantages of the Electric Cleaned Switch

The advantages of the Q & C Electric Snow Melters in keeping switches and other moving mechanism in operation during snow and sleet storms are manifold.

Once installed, they are always ready for instant service—twenty-four hours a day—for the whole winter season, operating expenses being involved only when the current is turned on during storms. Labor, which is always hard to get in a pinch, is practically eliminated and the dangers of men being hurt at switches is reduced to a minimum. A clean and easy operating switch is assured at all times, allowing schedules to be maintained during the worst storms.

The construction of these electric melters is simple and there is nothing to get out of order—no pipes to freeze—no gas to blow out; danger to inflammable rolling stock is eliminated.

Q & C Electric Snow Melters have been adopted by several of the larger railroads in the country. They have kept their switches open, improved the performance of the roads, effected large savings in operating costs and avoided substantial revenue losses. Such a device should prove worthy of your investigation—which we invite.

The time for installing electric snow melters has arrived.

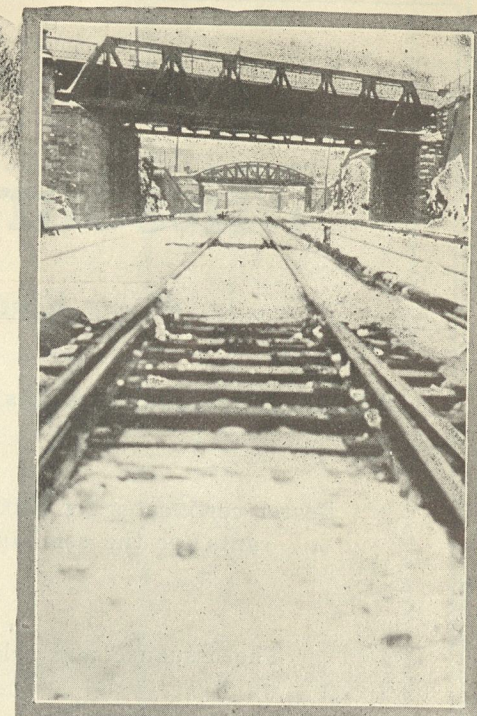
We will be glad to mail on request full information regarding the installation of Q & C Electric Snow Melters. Drop us a line today.

The Q & C Company

90 WEST STREET, NEW YORK

CHICAGO

ST. LOUIS



Q & C Devices for Railroads

Derails

Rail Saws

Skid Shoes

Rail Braces

Samson Rail Benders

Guard Rail Clamps

Electric Snow Melters

Piston Rod Lubricators

Rolled Steel Step Joints

Bonzano-Thomson Rail Joints

Century Steel Fence Posts

Car and Engine Replacers

Switch and Target Stands

Universal and Gilman-Brown

Emergency Knuckles

Full information and prices on request.

The Q & C Company, 90 West St., N. Y.

CHICAGO

SAN FRANCISCO

ST. LOUIS

RANK & GOODELL, St. Paul

SHERBURNE & COMPANY, Boston

The General Supply Co. of Canada, Ltd., Ottawa

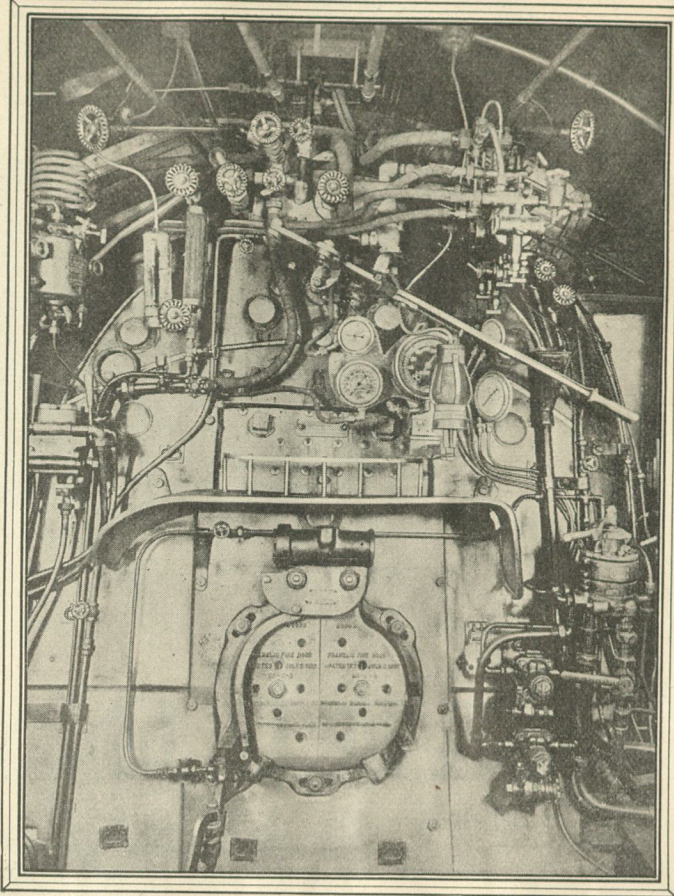
Class. No. Sold Amount

Stocking Fewer Valve Parts to Meet All Service Needs

To cut down the size of your repair stocks, Crane valves for each range of working pressures are standardized in design. For locomotive service, where working pressures run as high as 250 pounds, No. 82 extra heavy valves are supplied in three types—globe, angle and cross patterns.

A bonnet from any one of these valves, or a stuffing-box nut or disc—in fact any part but the valve body itself—fits any other valve of the same size, in its line. The check valves too, are fitted with the same disc holders and bonnet rings.

Crane special brass, a superior steam metal, gives these valves their great durability. Large union bonnets provide for easy regrinding of the seats and discs while the valves are in position. Every regular size, from 1/4-inch to 4 inches, is supplied.



EXTRA HEAVY VALVES OF CRANE SPECIAL BRASS ARE SUPPLIED FOR EVERY LOCOMOTIVE REQUIREMENT

CRANE

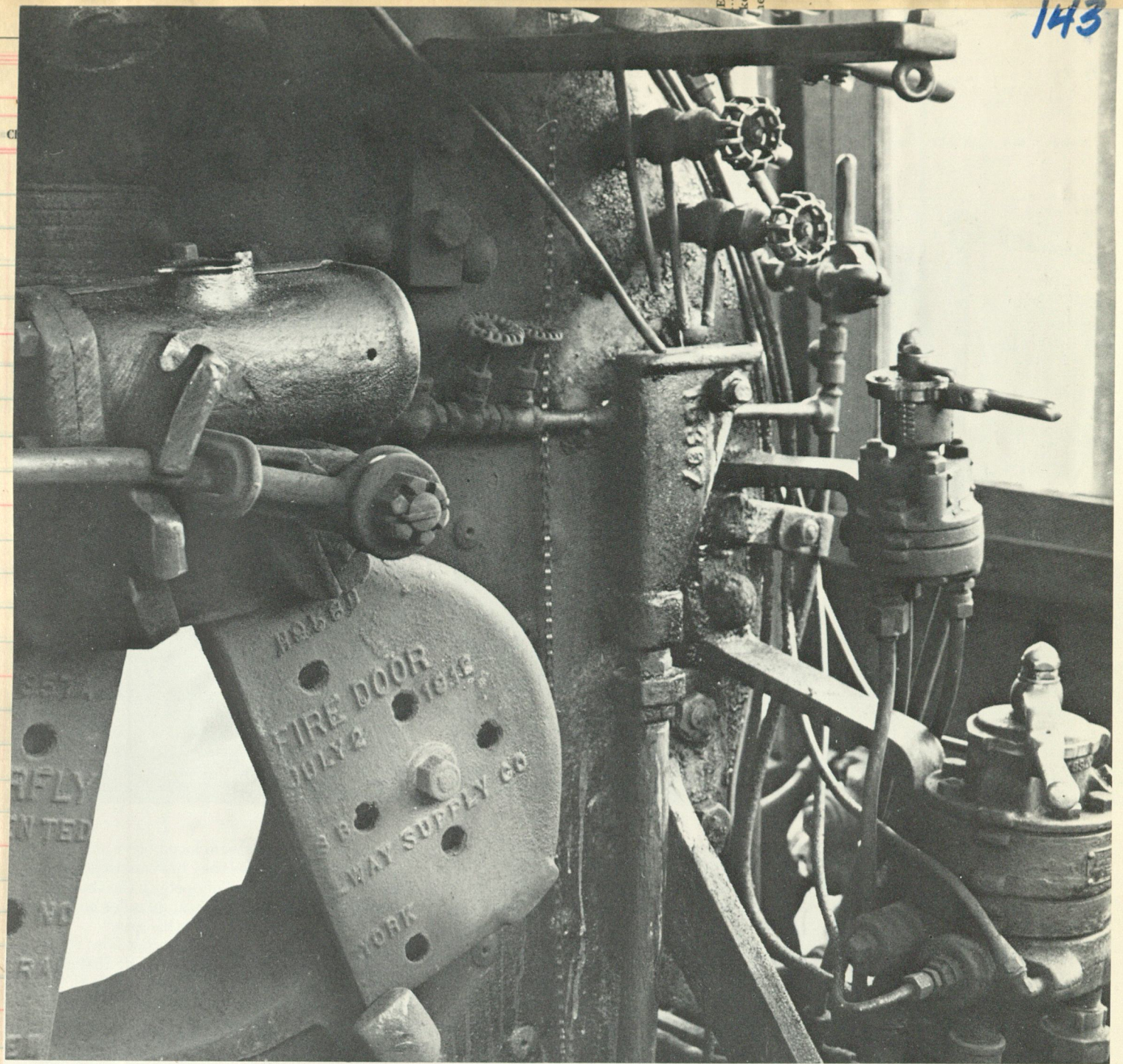
GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

Branches and Sales Offices in One Hundred and Forty Cities
National Exhibit Rooms: Chicago, New York, Atlantic City
Works: Chicago, Bridgeport, Birmingham, Chattanooga and Trenton

CRANE, LIMITED, MONTREAL. CRANE-BENNETT, LTD., LONDON
CRANE EXPORT CORPORATION: NEW YORK, SAN FRANCISCO
CRANE, PARIS

Could you run a locomotive?

This is the backhead of a Lima-built New York Central 4-8-2. Every one of those many gadgets has a purpose, and the fireman as well as the engineer must know how to use most of them; in fact, the engineer uses fewer than the fireman. Notice that the reverse gear on this locomotive is a wheel rather than a lever.

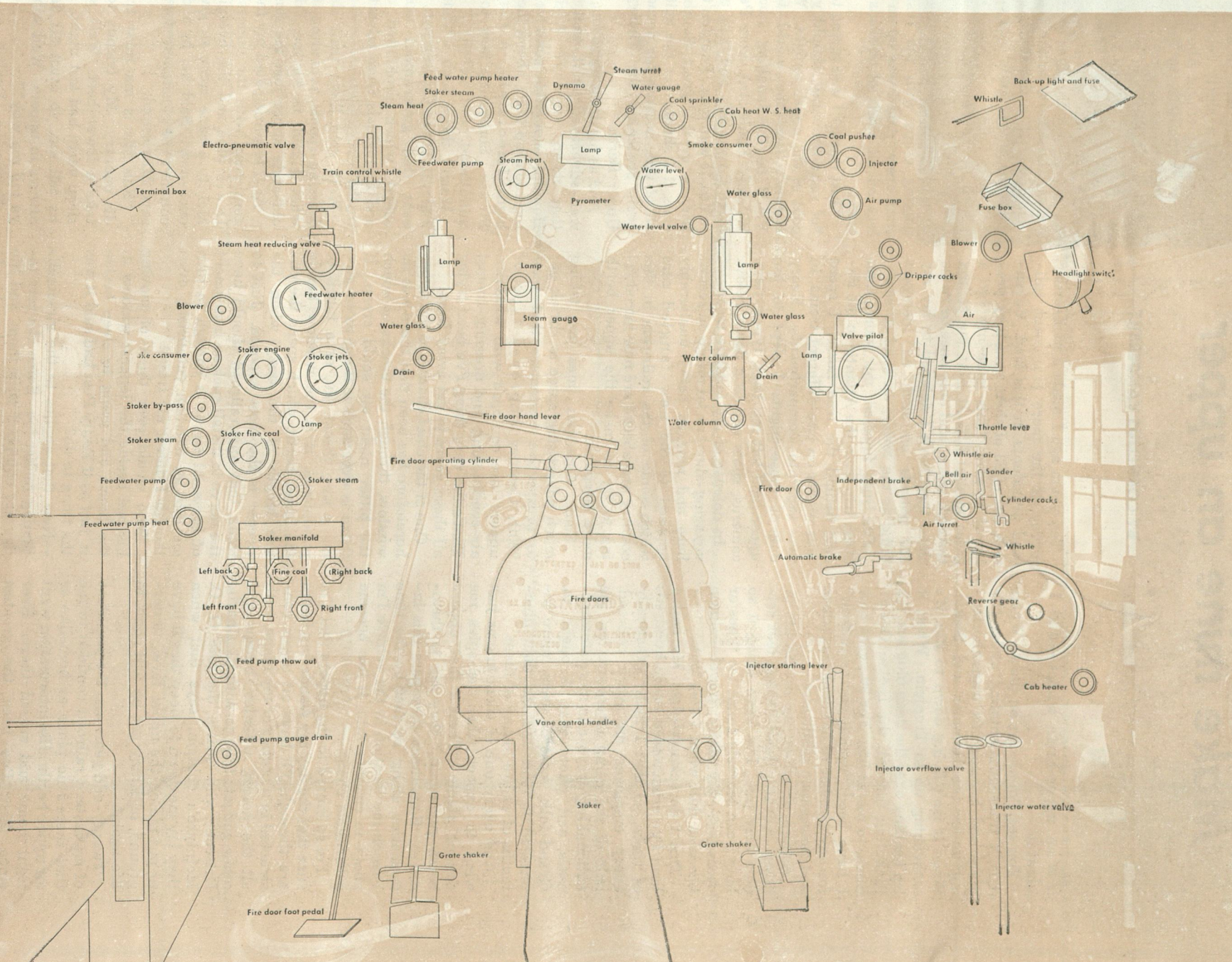


"Can you stand back over here? I've gotta throw a few diamonds on the fire... man, it's a helluva lot easier with a stoker... I remember the 5300's before they put 'em in... used to bust our backs out on the road... there, a nice even bed oughta do it."

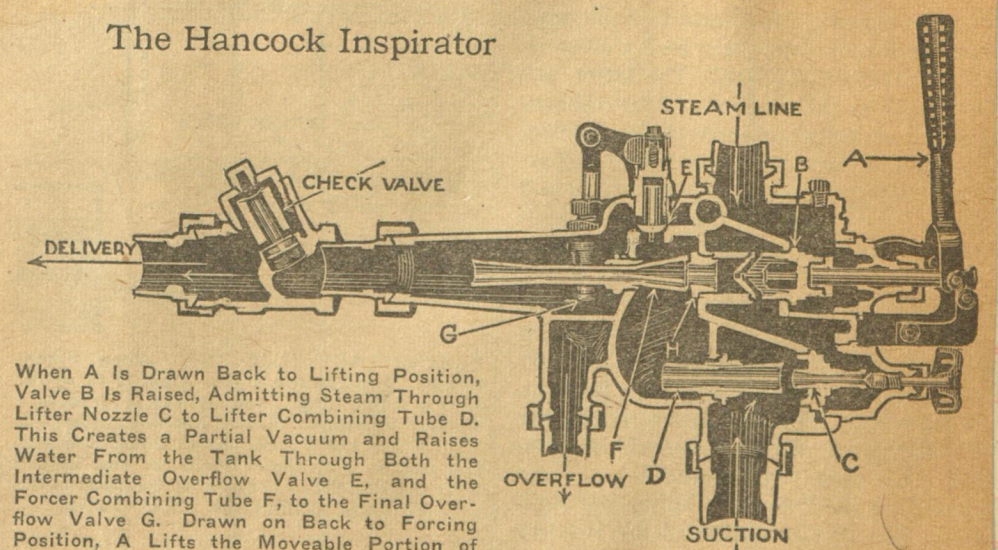
"Do you want me to check the water level?"

"Yeah, go ahead, it should be OK."

This kind of conversation went on for hours, and that's what I came for. On the left-hand side, the stoker feed, manifold and blower; on the floor, the fire door activator. On this side, the throttle lever, engine brake, train brake—and the roar of the fire through the open fire doors.



The Hancock Inspirator



When A is Drawn Back to Lifting Position, Valve B is Raised, Admitting Steam Through Lifter Nozzle C to Lifter Combining Tube D. This Creates a Partial Vacuum and Raises Water From the Tank Through Both the Intermediate Overflow Valve E, and the Forcer Combining Tube F, to the Final Overflow Valve G. Drawn on Back to Forcing Position, A Lifts the Moveable Portion of Valve B, Admitting Steam to Forcer Nozzle H and Tube F. At the Same Time, Valve G is Seated, Creating Sufficient Pressure to Close Valve E. The Check Valve Opens and the Injector is in Full Operation

L. N. S., Moline, Ill.—The injector was invented about 1852 by a Frenchman named Henri Giffard. It was introduced in England a few years afterward by Sharp, Stewart & Co., and in America about 1860 by Wm. Sellers & Co. After that it soon supplanted the feed pump as a means of putting water in locomotive boilers.



ANY freight car — of any railroad — anywhere in the United States — can be coupled up with any other freight car.

This simple fact makes it possible to combine in a single freight train many cars loaded at many different points, moving toward many different destinations.

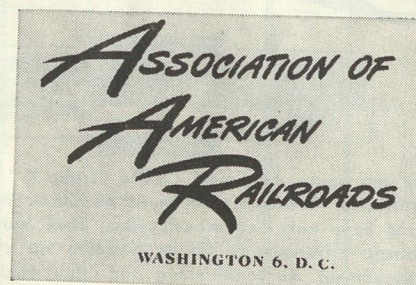
This in turn makes possible the low-cost continent-wide mass transportation system, which only railroads provide. And on mass transportation depends the mass production which our nation must have to keep itself well fed, well clothed,

well housed — sound and strong.

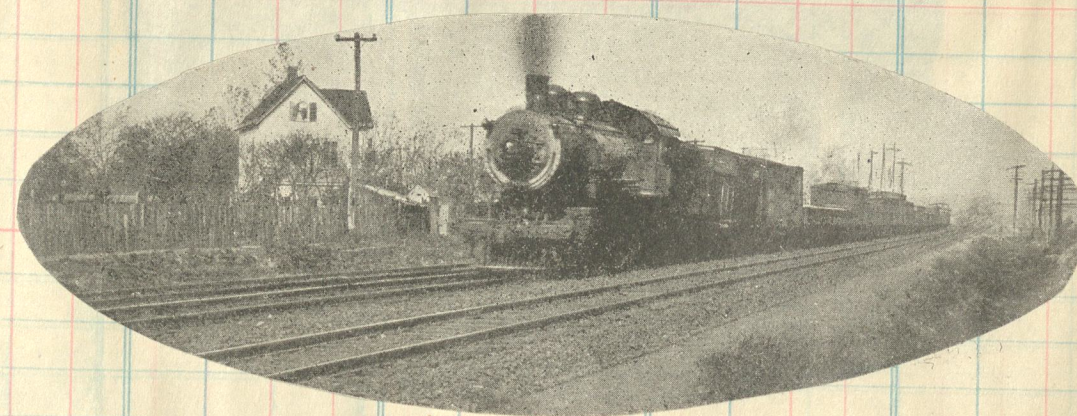
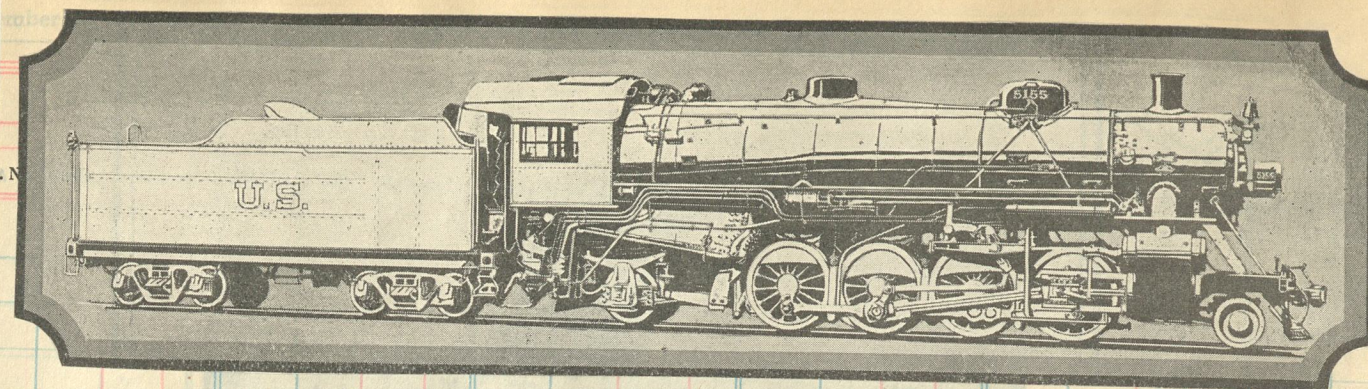
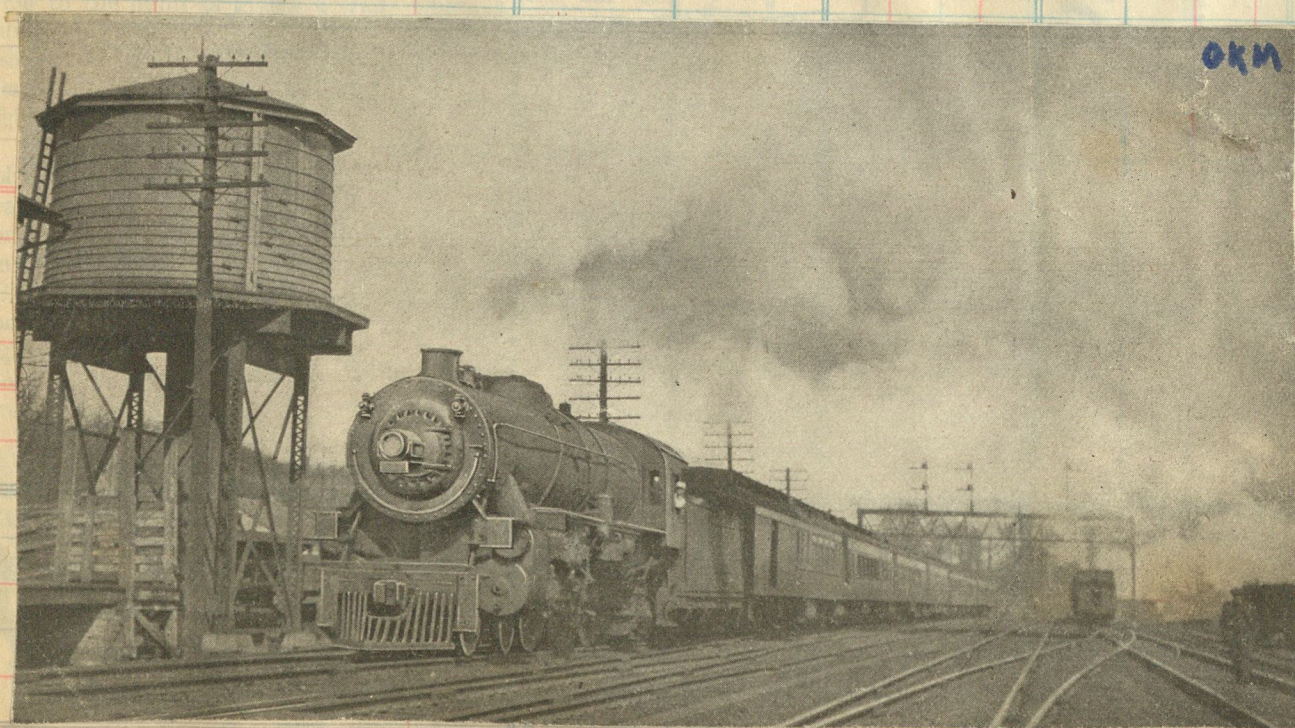
These rugged railroad couplers, whose "universal grip" often holds together more than 5,000 tons of loaded freight cars, are the product of never-ending research and tests. Begun sixty years ago by the Master Car Builders, this work is now carried on by the railroads through the Association of American Railroads, the mutual agency for the betterment of all railroading.

This is just one example of how railroads, which compete with one another for business, also work together to improve such interchange-

able parts as wheels, axles, trucks, brakes, draft gear, and safety devices. Such cooperation between railroads helps provide America with the most economical, the most efficient, and the safest mass transportation system in the world.



9



November 25, 1922

RAILWAY AGE

27

THE
N&C

A·R·A·STANDARD "D" COUPLERS

Adopted by the American Railway Association as standard equipment for Freight Cars and Locomotives

Made in Top and Bottom Operating Types

SHARON COUPLERS

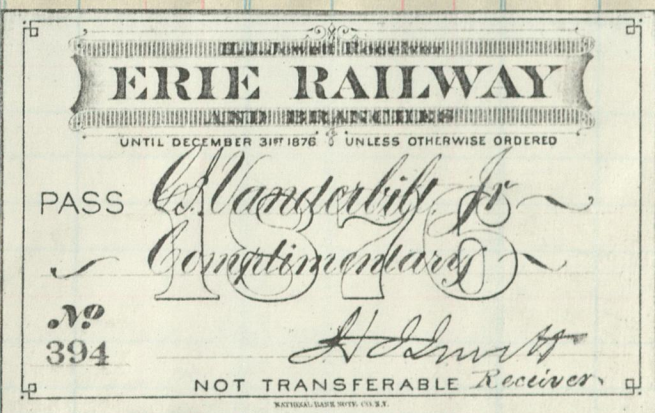
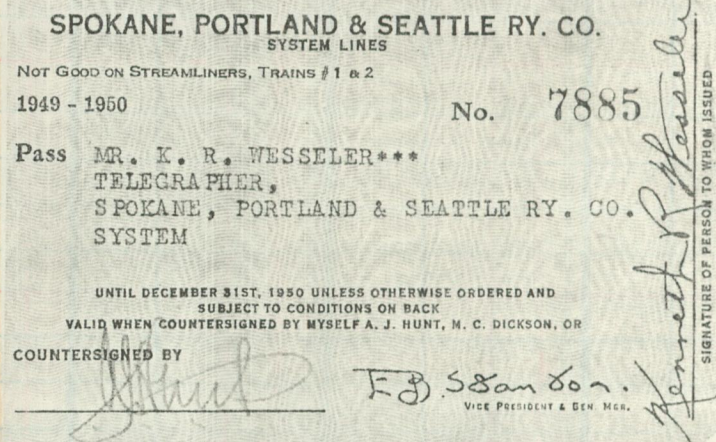
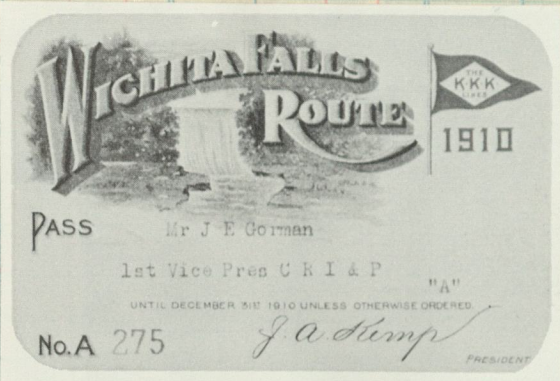
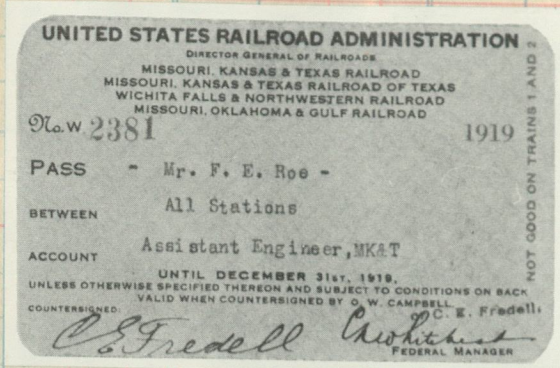
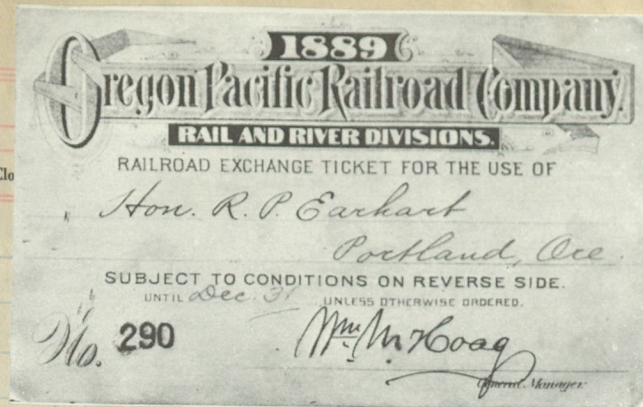
Top, Bottom and Side Operating Types for Freight and Passenger Cars and Locomotives

One-half and Three-quarter size Couplers for narrow gauge cars.

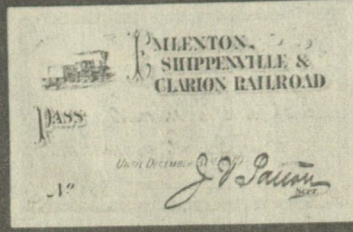
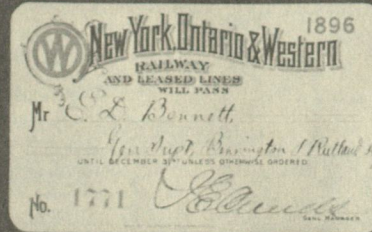
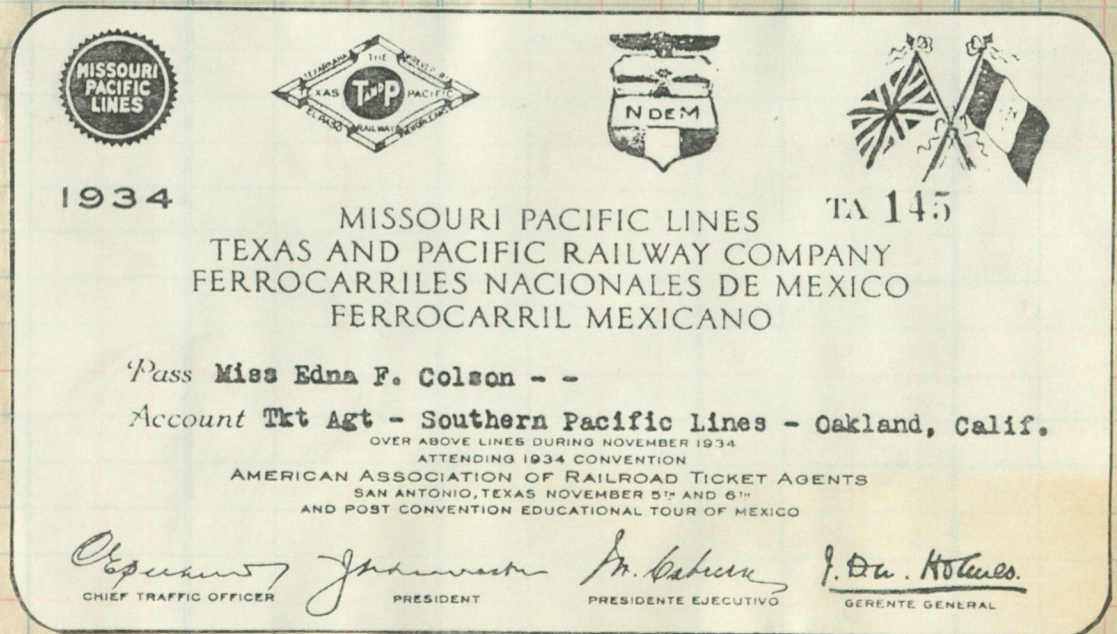
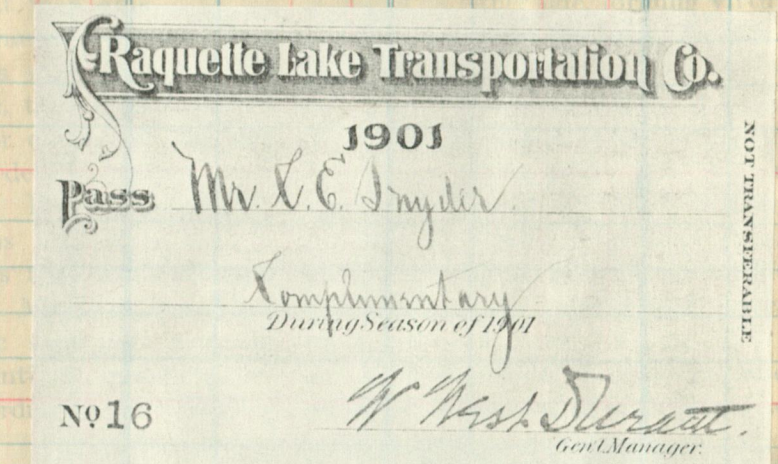
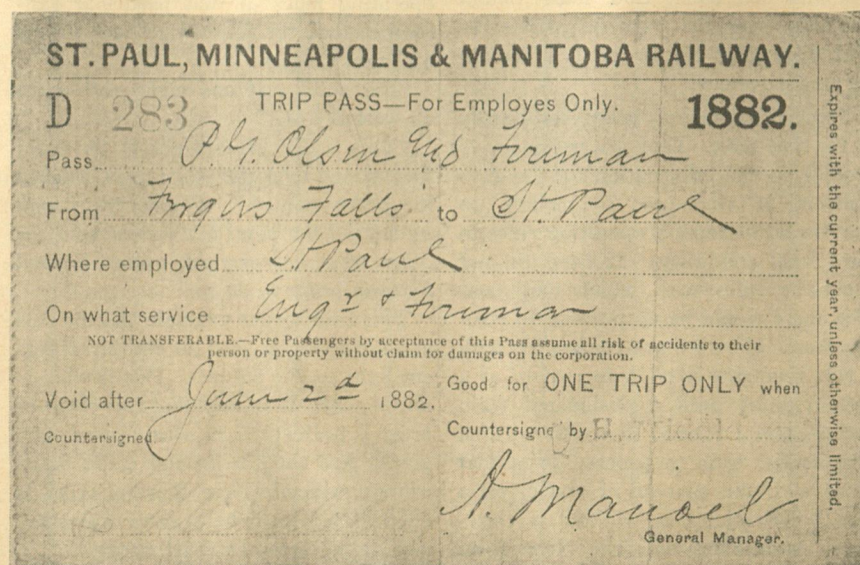
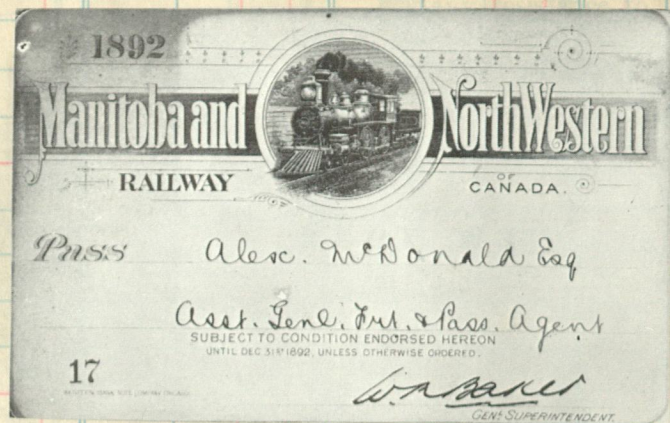
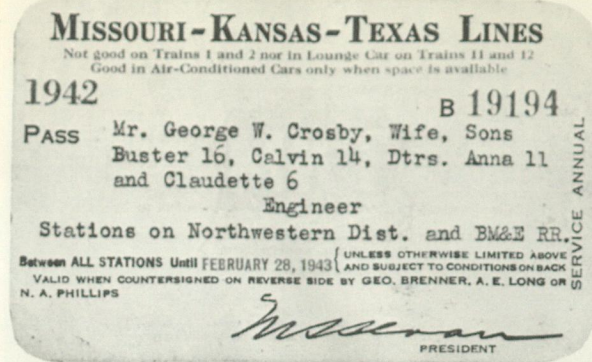
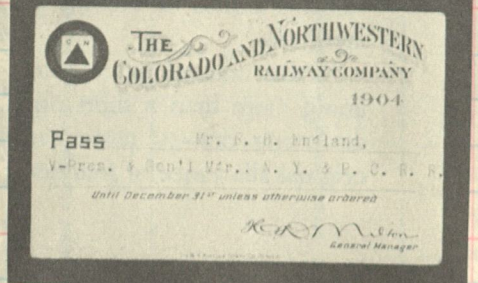
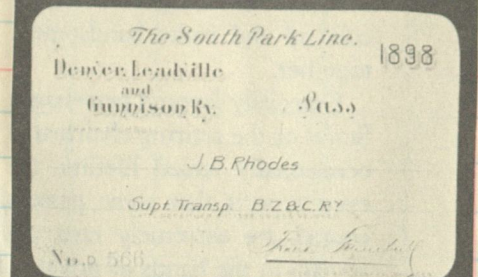
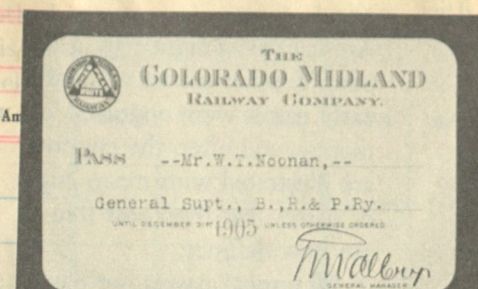
THE NATIONAL MALLEABLE CASTINGS COMPANY

CLEVELAND	CHICAGO	INDIANAPOLIS	TOLEDO
SHARON, PA.	MELROSE PARK, ILL.	EAST ST. LOUIS, ILL.	

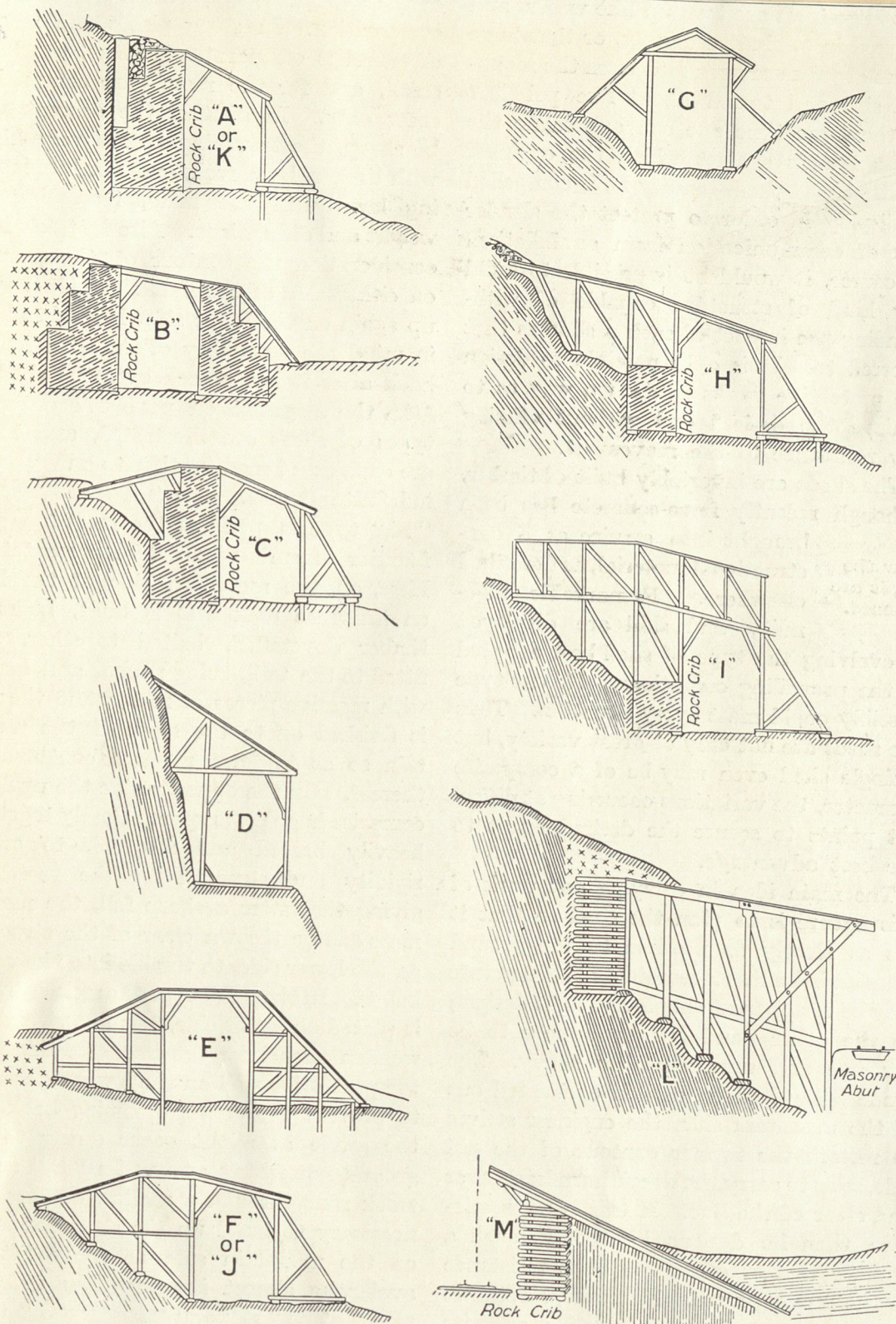
Clos. No. Sold Amount Clo



PASSES



One of several reasons why working for a railroad was attractive was the pass system which provided free transportation for an employee and his dependents. By obtaining foreign line Trip Passes could travel anywhere in the country. Some roads were restrictive in issuing trip passes, viz: the P.R.R., A.C.L., I.C., Santa Fe, S.P. Then the B. & O., N.Y.C., S.A.L., Burlington, Southern, U.P., N.P. had a liberal policy on trip passes. Naturally we Agents, when possible, would route passengers and freight over those roads that had a generous method in regard to trip passes.



DIFFERENT TYPES OF SNOW-SHEDS.

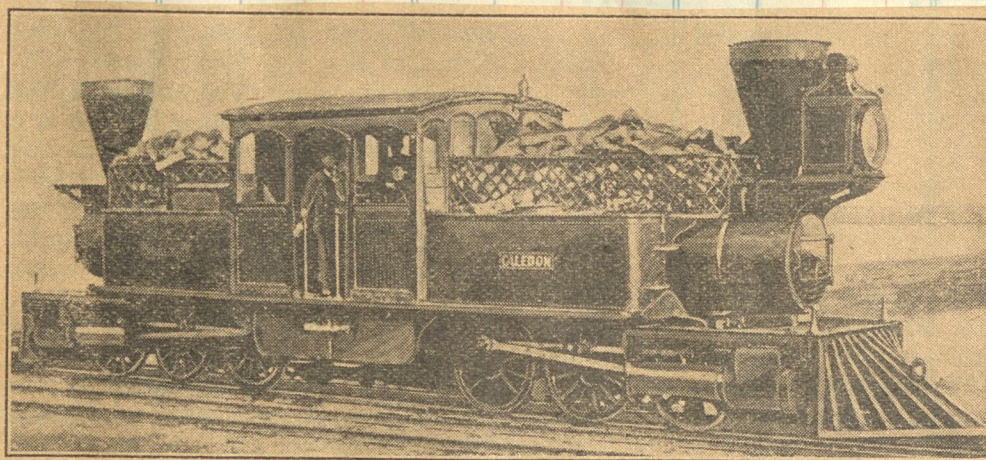


FILLING TOPOGRAPHER'S GULCH, IN THE CASCADES.

Hydraulic giants were set to work to wash the soil down into the ravine below. Before a handful of earth was moved the engineers spent £12,000 laying down flumes together with machinery to operate the "hydraulickers."



"Hold it, Pop! These things are no longer adjusted at trainmen's level!"



Courtesy of Engineer J. Toman, and Canadian Pacific Staff Bulletin
Built in the Early '70s for the Toronto, Grey & Bruce Ry., the Double-Ended "Caledon" Kept Her Hogger Weary Matching Wits with Two Firemen. She Was Scrapped in 1931

THE ADAMS & WESTLAKE MFG. CO.,
CHICAGO,
BOSTON AND NEW YORK,
MAKERS OF

COACH LAMPS,

SLEEPING CAR LAMPS,

Dining Car Lamps,

CABOOSE LAMPS,

Postal Car Lamps.

"Tornado" Lamps.

SWITCH LAMPS,

TAIL LAMPS,

Engine Signal Lamps,

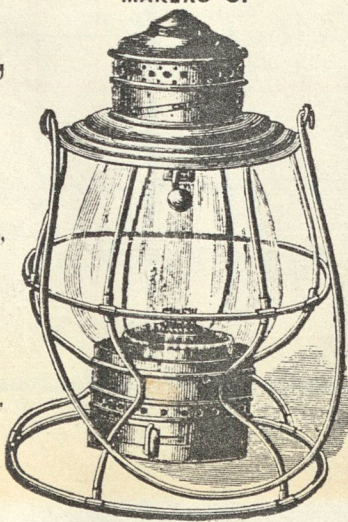
HEAD LIGHTS,

Railway Lanterns,

DEALERS IN

—GLOBES,—

Chimneys, Burners, etc.



No. 11. GIANT.
Strongest lantern made; casts no shadow.

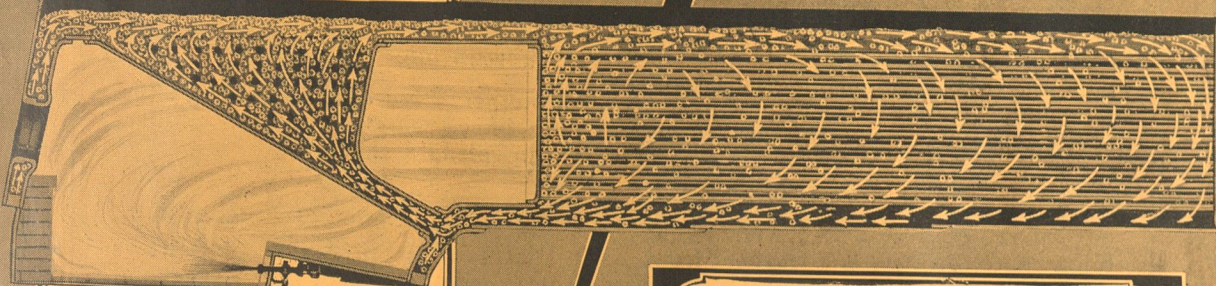
Nicholson Thermic SYPHONS

Substantiation

from reports of the
past few days

"On five Mikado type, Syphon-equipped locomotives the flue mileage on December 31 averaged 90,416, and it was estimated by local people that these engines would make from 3,000 to 15,000 additional miles. Compared with the above, three non-Syphon Mikado Locomotives in the same territory made an average of

*Increase the Life
of Flues*



60,143 flue miles each when it was necessary to renew a "V" of about 100 flues in the bottom of the boiler."

"Seven non-Syphon locomotives made an average of 57,788 flue miles when it was necessary to renew a part set of flues in the lower part of each boiler. Ten Syphon-equipped locomotives have made an average of 79,700 flue miles to the present date and no flues have been renewed."

"Six non-Syphon locomotives with 22" cylinders made an average of 51,988 flue miles between shoppings. When shopped a full set of 225 flues was renewed on each locomotive. Twenty Syphon locomotives made an average of 78,034 flue miles per locomotive."

Names, complete data and a full file of similar reports available upon request.

SHEETS, flues and staybolts expand and contract under the influence of unequal temperatures. When it is recalled that a small temperature variation throws many tons of pressure on the flue sheets, the reasons will be clear.

Rapid circulation induced by the Syphon equalizes the temperature throughout the boiler.

The unequal stresses present in non-Syphon boilers are eliminated. Further, rapid Syphon induced circulation is an important element in preventing scale formation on flues and corrosion. Every Syphon equipped locomotive is proof and testimony of increased flue life.

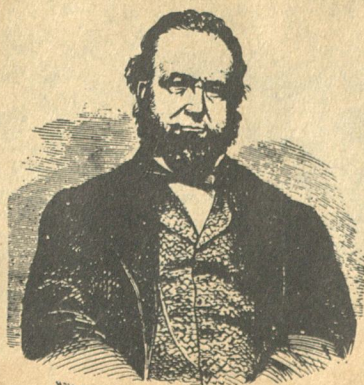
Bulletin No. 10 (also in Spanish and French) describes Syphons fully. Write for it. Consultation invited. Showings of our new 1000 ft. reel on Syphons are being made. Arrange for a "booking."

Locomotive Firebox Co.
310 South Michigan Avenue
Chicago, Illinois

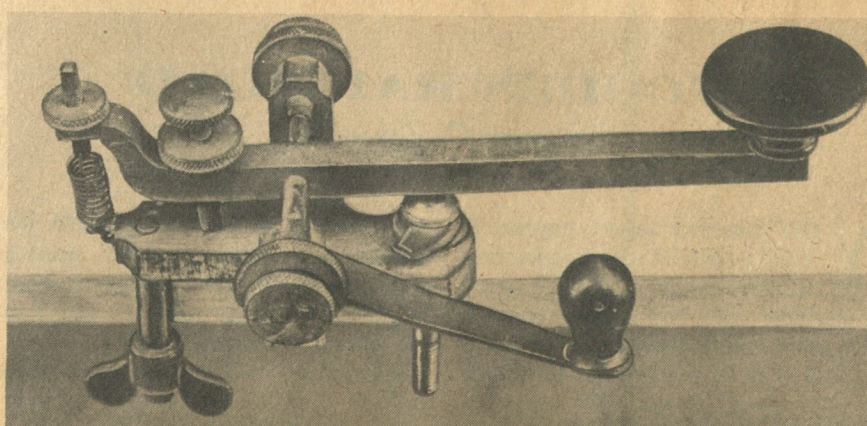
Ry Age "The Heart of the Locomotive" 1926

D. B. Nyack, N. Y.—Thermic syphons are triangular-shaped water legs, used singly or in multiple, in a locomotive firebox, to increase its heating surface and improve the circulation of water in the boiler. The small end of the syphon forms an intake neck which is attached to the base of the rear flue-sheet, or inside throat-sheet; while the upper, or flared exhaust end, is butt-welded to an opening in the crown-sheet. The automatic effect of the device is to take water at relatively low temperatures and project it upward and forward, sweeping accumulated steam along; thus allowing the closest contact between the water and the heated sheet.

In tests it has been proven that syphons materially reduce the amount of time and fuel required to fire up a locomotive. They also act as a substantial support for the brick arch, and reduce the danger of boiler explosions, by continuing to deliver water over the crown-sheet for some time after normal circulation ceases to exist.

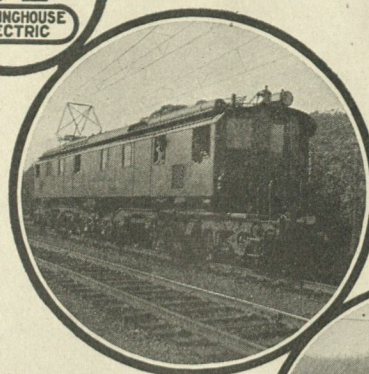
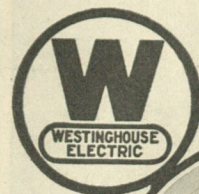


Charles Minot, superintendent of the Erie, was first to telegraph a train order, in 1851, and started their use.



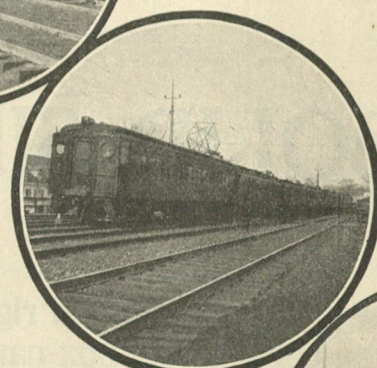
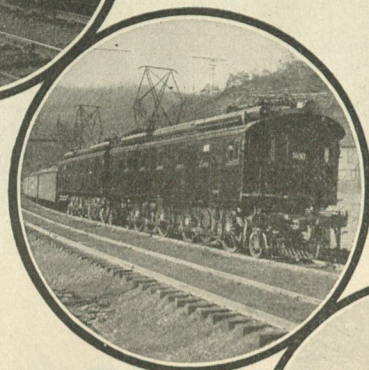
Early model of Morse key, about 1850, similar to type that made first train order.

The Adaptability of Alternating Current for Electrification

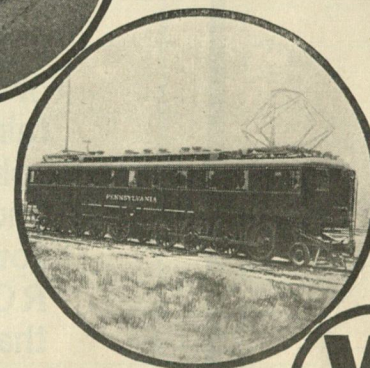


New York, New Haven & Hartford R. R.
2400 HP., 181 Ton, 11,000 Volt, Single-Phase, Alternating Current, Single-Cab Locomotive. High Speed Passenger Service.

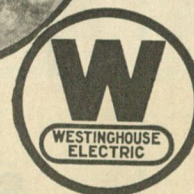
Norfolk & Western Ry.
4000 HP., 382 Ton, 11,000 Volt, Single-Phase, Alternating Current, Double-Cab Locomotive. Heavy-Grade Freight Service.



Pennsylvania Railroad
450 HP., 60 Ton, 11,000 Volt, Single-Phase, Alternating Current, Multiple-Unit Cars. High-Speed Suburban Service.



Pennsylvania Railroad
3300 HP., 200 Ton, 11,000 Volt, Single-Phase, Alternating Current, Single-Cab Locomotive.
Main Line Passenger and Freight Service.



Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

Westinghouse

FORM 19 THE DENVER & SALT LAKE RAILWAY CO. FORM 9

TRAIN ORDER NO. 2 9/26 28

To: O.E. East At: Bourg

Reduce to 5 miles an hour over
Bridges 137.75-142.03-155.22
and 177.54

Derail installed on main
track Coter Just West of
East Nye Switch

J. B. C.

CONDUCTOR AND ENGINEER MUST EACH HAVE A COPY OF THIS ORDER.

Made: Camp Time: 5:00 a.m. Oper:

405. What is the first known instance of the telegraph being used for directing train operations?

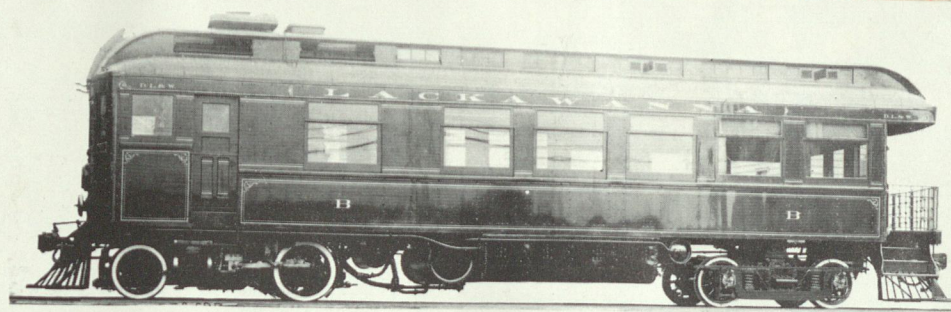
One of the earliest telegraph lines built for commercial use closely followed the Erie Railroad tracks across New York State. On September 22, 1851, Charles Minot, Superintendent of the Erie, was on a west-bound train which drew into a siding at Turner (now Harriman), New York, to allow an east-bound train to pass. The train was late. Minot went to the telegraph office and wired ahead to locate the missing train. Learning that the train had not arrived at Goshen, thirteen miles west, Minot sent a telegram ordering that the train be held there. He then ordered the waiting train to proceed to Goshen where it would meet the east-bound train. The locomotive engineer is said to have refused to take such a risk. Thereupon Minot climbed into the cab, drove the engine to Goshen where the east-bound train was waiting. This is the first instance on record of the telegraph being used for train dispatching.



WHAT EVERY HOGGER WANTS.....Joe Easley
"Soon as I get a little money saved I'm gonna buy me a coupla acres around here, get me a few chickens, catch up on my fishin', and take it easy"



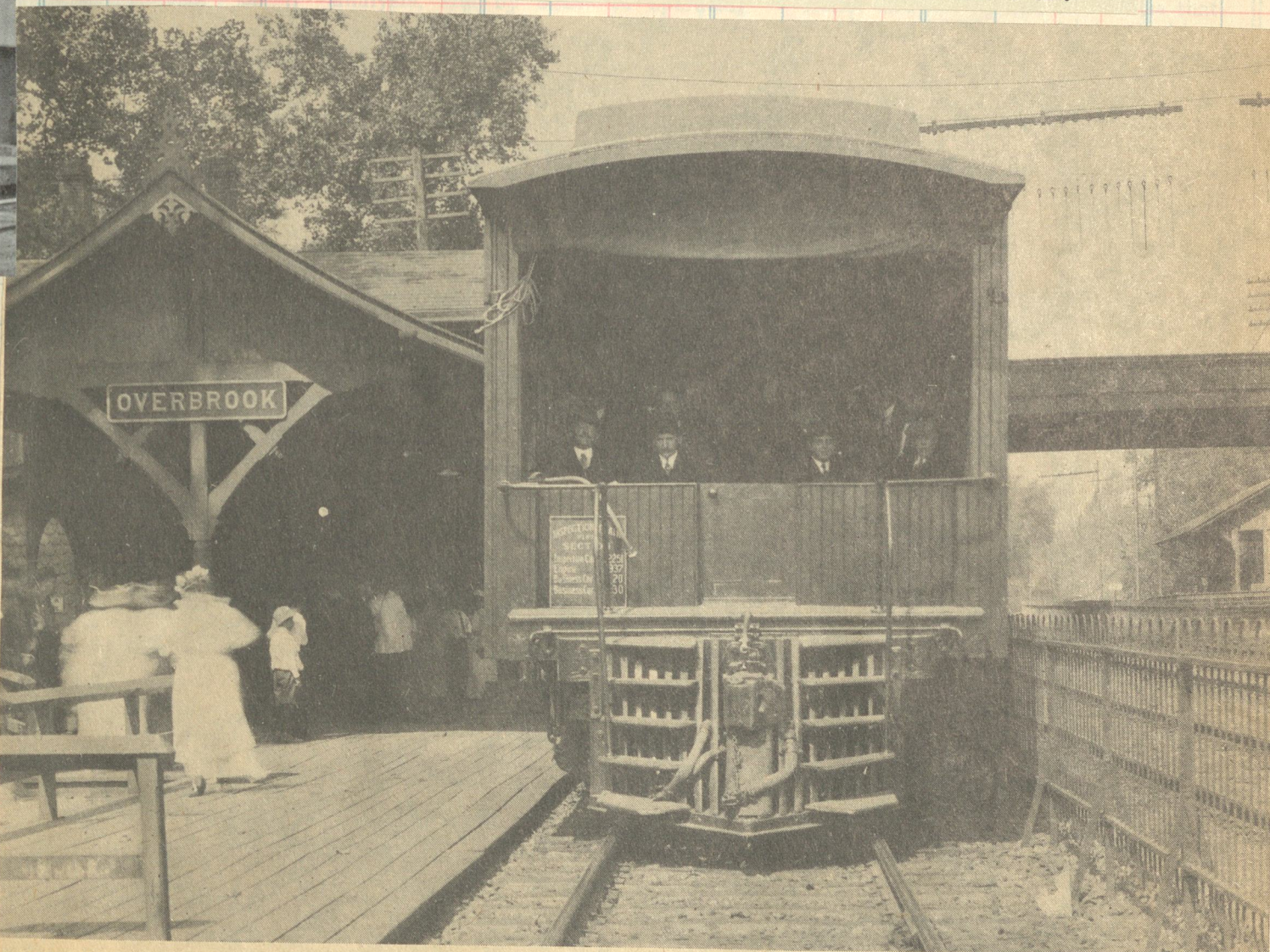
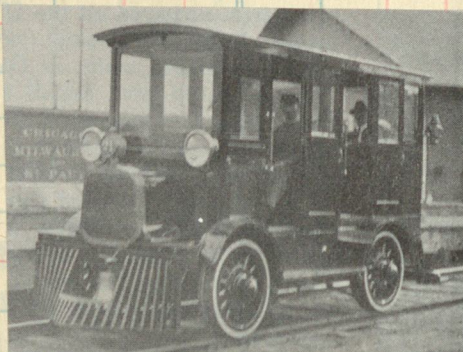
Inspection car of the Fall Brook Coal Co.



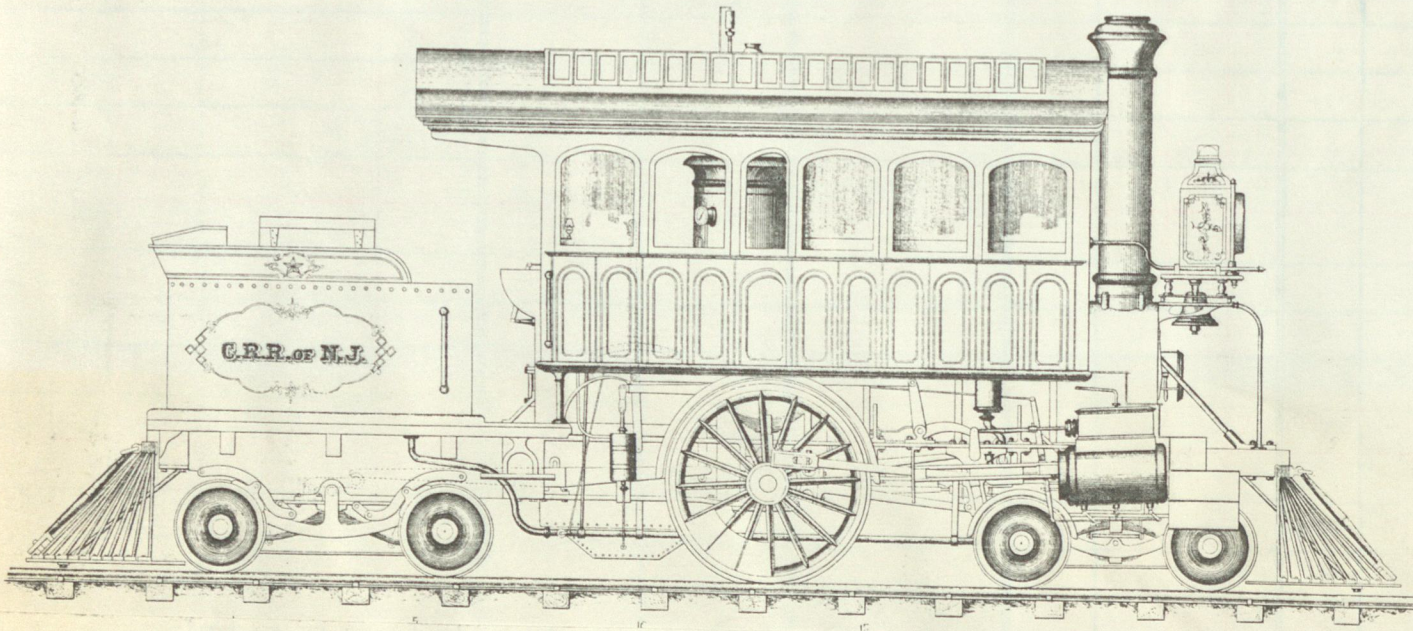
Nothing but the best for the D.L. & W. "brass"



Katy officials covered the road in this fancy Fordor rail car.

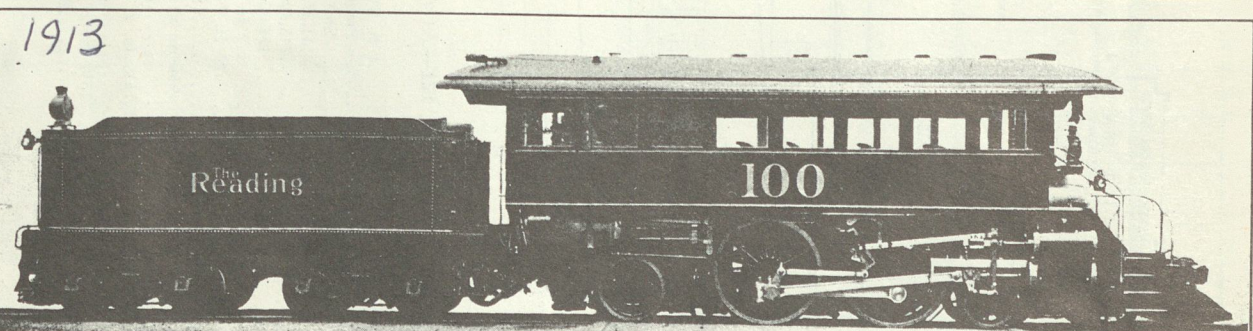


Back in the halcyon days when the Pennsylvania was known as "The Standard Railroad of the World," life was quieter and the skirts lower. Man at extreme right in the inspection car appears to be W. W. Atterbury, later president of the road.

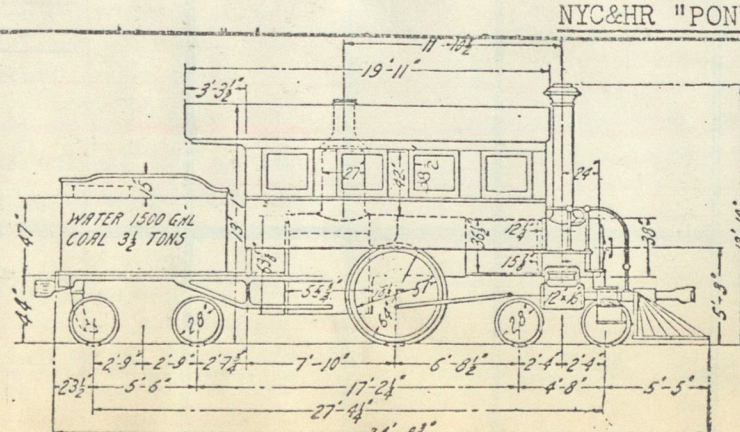


THE SUPERINTENDENTS LOCOMOTIVE STAR
BUILT BY THE
CENTRAL R.R. OF NEW JERSEY MACHINE WORKS
ELIZABETHPORT N.J.
T.W. PEEPLES Mechanical Engineer W. WOODCOCK Master Mechanic

blt 1871



Atlantic (4-4-2) Locomotive for Inspection Service. Built by the Philadelphia & Reading.



NYC&HR "PONY" Inspection Engines

Diagram for Pony Engines 25,26,27,29.

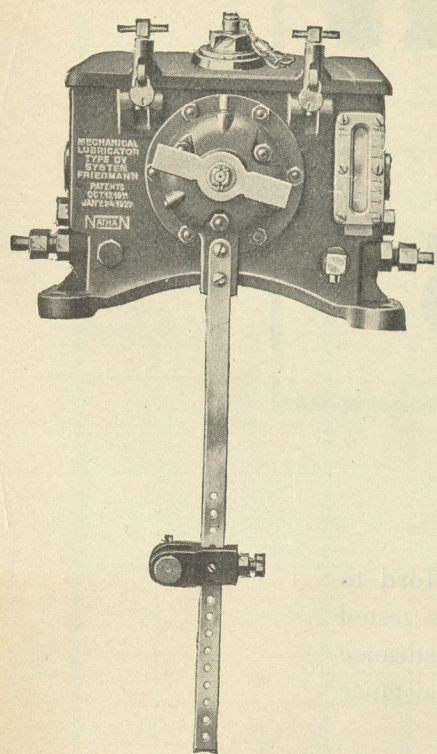
Kind of main valve.....	Slide	Weight on front Truck, working order.....	22500 lbs.
Firebox length inside.....	48 1/2 in.	Weight on Drivers, working order.....	24000 lbs.
Firebox width inside.....	35 1/2 in.	Weight on rear Truck, working order.....	39000 lbs.
Grate area.....	12 sq. ft.	Total weight of Engine, working order.....	85500 lbs.
Tubes, number small.....	100 2 in.	Steam Pressure.....	140 lbs.
Tubes, length over sheets.....	9 ft. 3 in.	Max. Tractive Force.....	4280 lbs.
Heating surface tubes.....	480 sq. ft.		
Heating surface firebox.....	77 sq. ft.		
Total heating surface.....	557 sq. ft.		

Gage.....	4 ft. 8 1/2 in.
Cylinders.....	18 in. x 24 in.
Steam Pressure.....	225 lbs.
Diam. of Drivers.....	68 1/2 in.
Tractive Effort.....	21,700 lbs.
Rigid Wheel Base.....	6 ft. 6 in.
Total Wheel Base.....	24 ft. 7 1/2 in.
Heating Surface, Tubes.....	1,154 sq. ft.
Heating Surface, Firebox.....	120 sq. ft.
Heating Surface, Total.....	1,274 sq. ft.
Grate Area.....	63 sq. ft.
Weight on Drivers.....	98,375 lbs.
Weight, Total.....	161,500 lbs.
Fuel.....	Anthracite coal

Class. No. Sold

NATHAN

MECHANICAL LUBRICATOR



Nathan Mechanical Lubricators guarantee proper lubrication at all times. They feed a measured quantity of oil for each stroke of the piston whether working steam or drifting. The oil feed stops when the engine stops.

Saves Oil

A Safeguard To Service

WITH Nathan Mechanical Lubricators cylinder lubrication is safeguarded from terminal to terminal.

Instantly the wheels turn the oil feed starts. There are no valves to open or adjust. Automatically, lubrication is uniform and constant for every mile of the run.

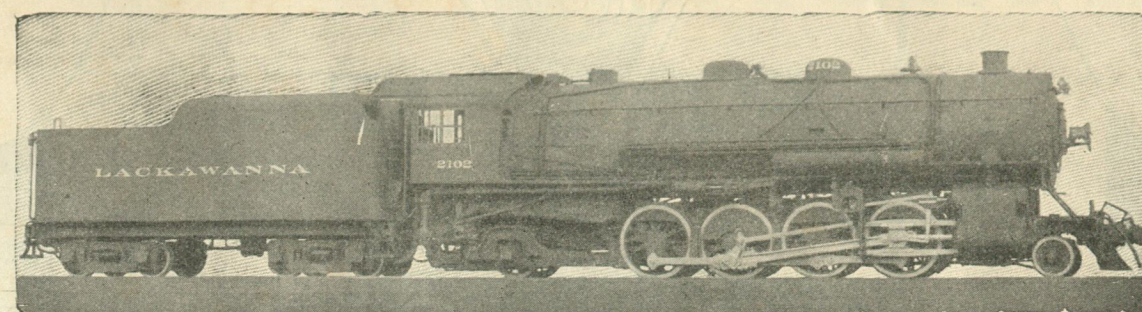
Nathan Mechanical Lubricators have large reservoir capacity, 8 to 20 pints and independently adjustable feeds for all auxiliaries.

In actual service Nathan Mechanical Lubricators are showing a 50% oil saving in freight service and a 25% oil saving in passenger service. And with this oil saving, cylinder packing maintenance is materially reduced.

Let us send you actual performance data.

NATHAN MANUFACTURING COMPANY
250 Park Avenue, New York

582 Market Street SAN FRANCISCO, CAL. 14 E. Jackson Blvd. CHICAGO, ILL. G. F. Cotter Supply Co. HOUSTON, TEX. 412 Bisbee Bldg. JACKSONVILLE, FLA.
Export Dept., International Railway Supply Co., 30 Church St., N. Y.



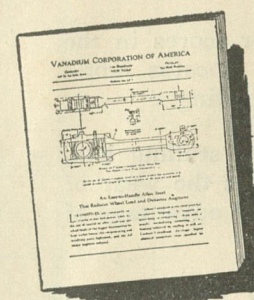
Tough, Strong Rods and Pins of Carbon-Vanadium Steel

BECAUSE of its toughness and higher physical properties, Carbon-Vanadium Steel was selected for the rods and pins of five Mikado type locomotives built by the American Locomotive Company for the Delaware, Lackawanna and Western.

In addition to its toughness and greater strength, Carbon-Vanadium has another advantage: it does not require quenching or tempering and can be handled without difficulty by any shop having forging equipment.

These Mikados — and fifty other locomotives ordered by the Lackawanna during the last year — are also equipped with Vanadium Steel Frames.

For greater strength and safety, specify Carbon-Vanadium Forgings and Vanadium Frames on all new locomotives and adopt them for replacements on existing power.

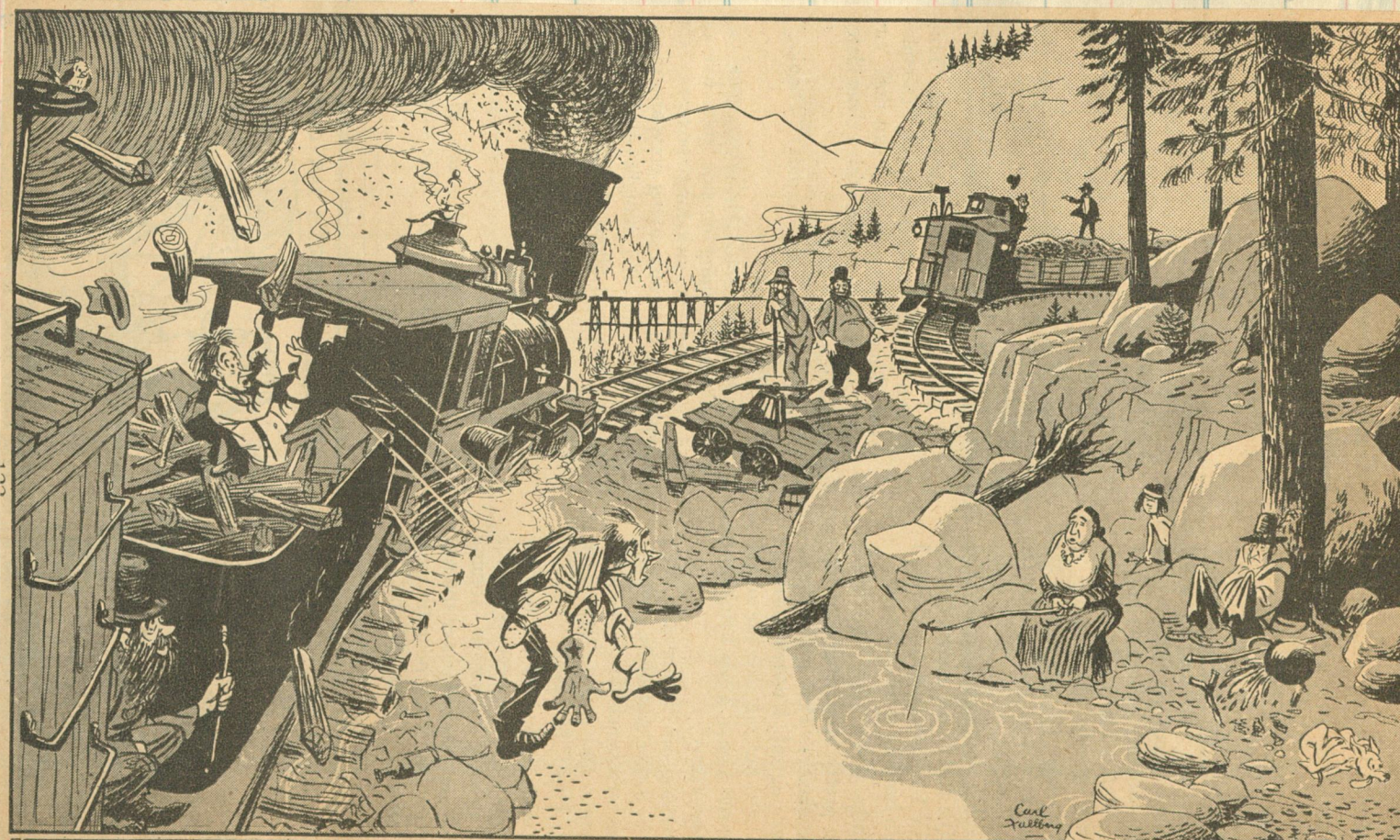
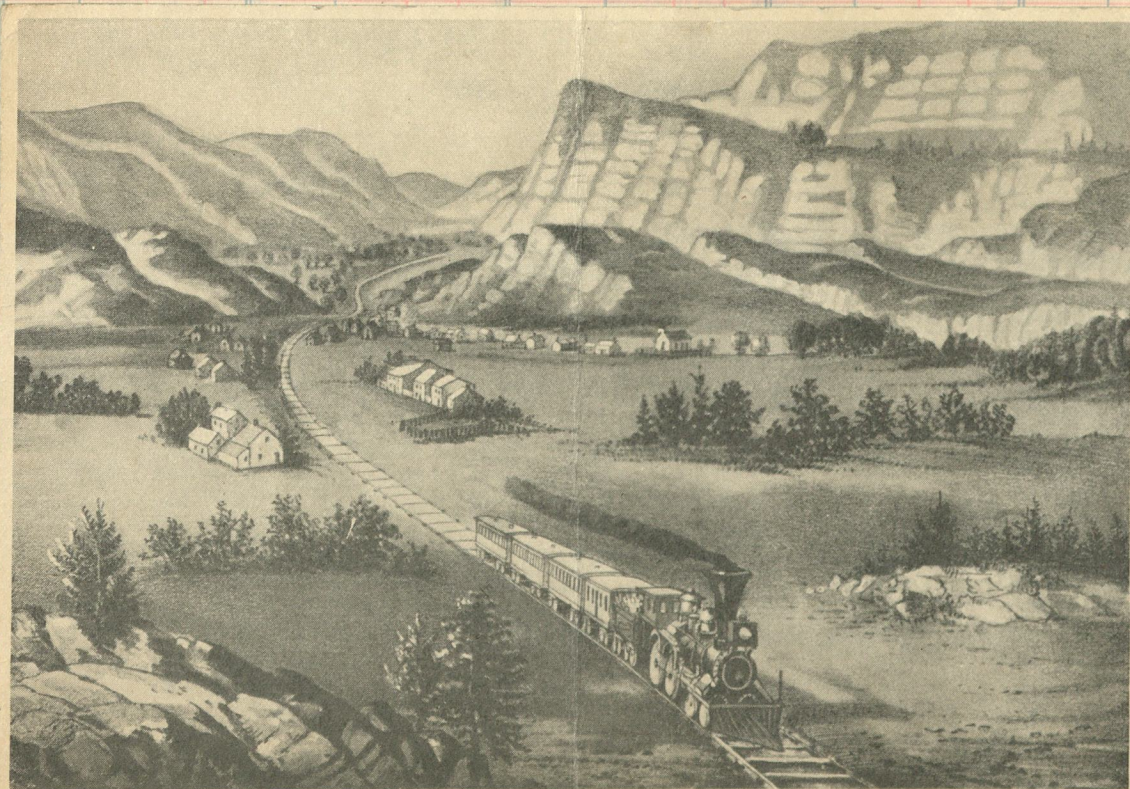


Write for Bulletin LF-1 containing detailed information about Carbon-Vanadium, the tough but simple alloy steel.

VANADIUM CORPORATION OF AMERICA

NEW YORK
120 Broadway

DETROIT
Book Bldg.



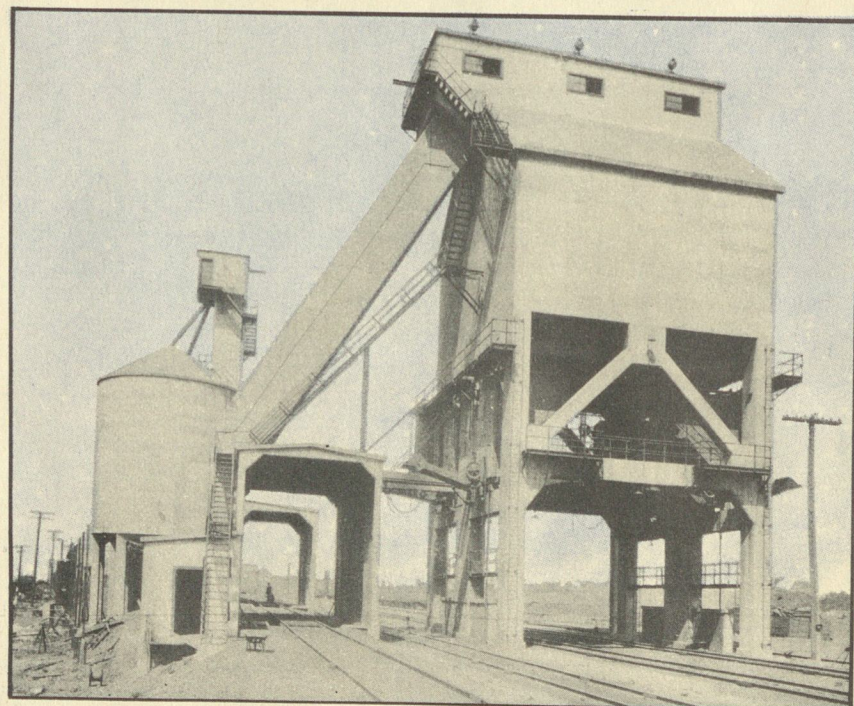
FIDDLETOWN & COPPEROPOLIS RY.

No. 8 Tragedy at Tehachet Loop: Low-Water Hogan Mistakes His Own Caboose for Another Train, and Joins the Birds

by Carl Fallberg



Coaling Stations



A hundred railroads now know
the value of this service

OVER 600 successful coaling stations—designed, built and equipped throughout by Fairbanks-Morse—have a definite message to the railroads of America. Through their dependable operation and remarkably low maintenance costs, they prove the wisdom of placing the entire responsibility for coaling station construction in the experienced hands of Fairbanks-Morse engineers.

The station and sand plant, illustrated*, is typical of scores of other equally fine stations. It has an overhead

storage capacity of 1060 tons of coal, divided into two 500-ton bins and four scale pockets, each with a capacity of 15 tons.

The sand plant has a capacity of 1500 cubic yards of wet sand which is dried and then elevated to the dry sand storage bins in the coaling station by compressed air. Coal elevator is driven by a 40-hp. F-M ball bearing slip-ring motor. Sand elevator is driven by a 15-hp. F-M ball bearing squirrel-cage motor.

Ask for full information about this and other Fairbanks-Morse Stations.

The new F-M skip-hoist is described on the next page

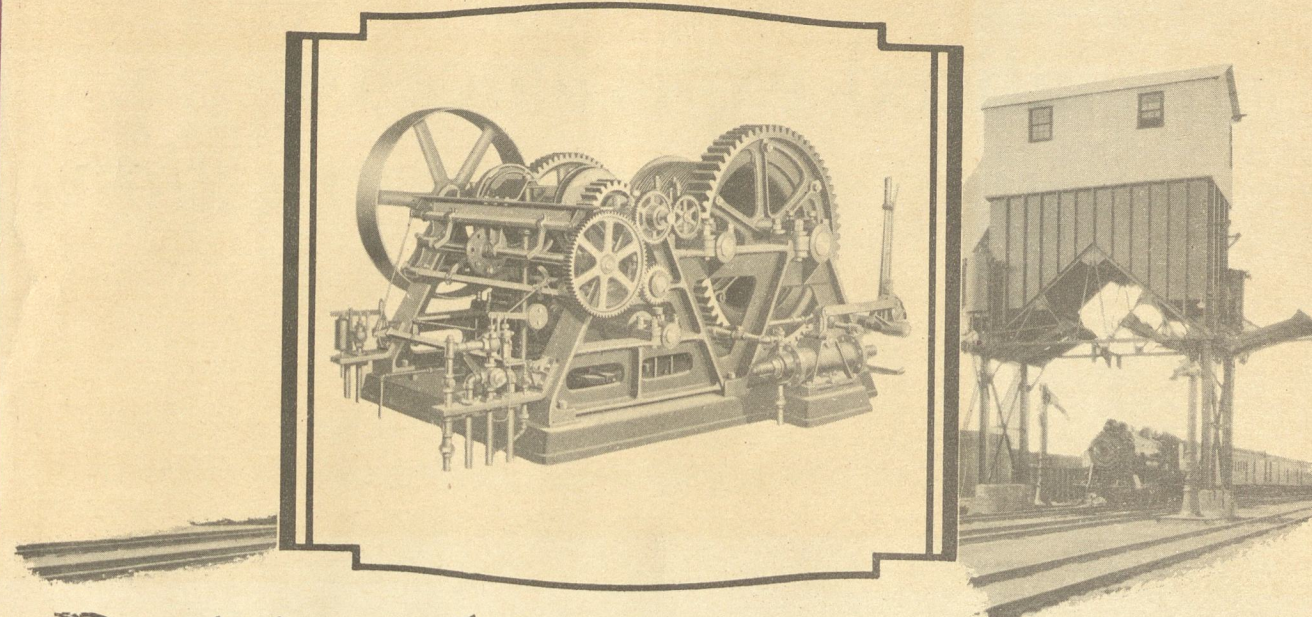
* Name on request.

built throughout by

FAIRBANKS-MORSE

1926

Coaling Stations



Positive skip-hoist operation with this unit

An outstanding development in skip-hoist coaling stations is the automatic hoisting unit above. Here is an absolutely dependable hoisting unit which will operate under all conditions.

The action of the hoist is automatically controlled by a particularly simple hydraulic mechanism, which uses light oil under pressure. Built "self-contained" with the machine, this mechanism governs and protects the complete cycle of hoisting, timing and reversing operations. The action is positive and entirely automatic. The distance of travel or period of pause can be easily and quickly adjusted and varied to suit any usual condition.

Fairbanks-Morse Motor Cars

Possess the heritage of 30 years of specialization. Ask for complete information covering the latest improvements

*First on the rails
—and still first*

In an emergency, such as failure of power or hydraulic pressure, over-run of skip at either end, excessive speed of machinery, error of attendant, and the like, the hoist is automatically stopped and the brake applied.

The hoisting unit may be driven by any kind of prime mover which runs at a constant speed in one direction.

Why not have one of our engineers tell you more about this advanced skip-hoist, and the wide range of coaling stations, sand plants, etc., that are being built and equipped by Fairbanks-Morse?

FAIRBANKS, MORSE & CO., Chicago

Manufacturers of complete coaling stations, motor cars, hand cars, push cars, velocipedes, stand-pipes for water and oil, tank fixtures, oil engines, steam power and centrifugal pumps, scales

built throughout by
FAIRBANKS-MORSE
Railway Age 1923

EDGEWATER STEEL

LOCOMOTIVE TIRES STEEL TIRED WHEELS
CAR WHEEL TIRES ROLLED STEEL WHEELS

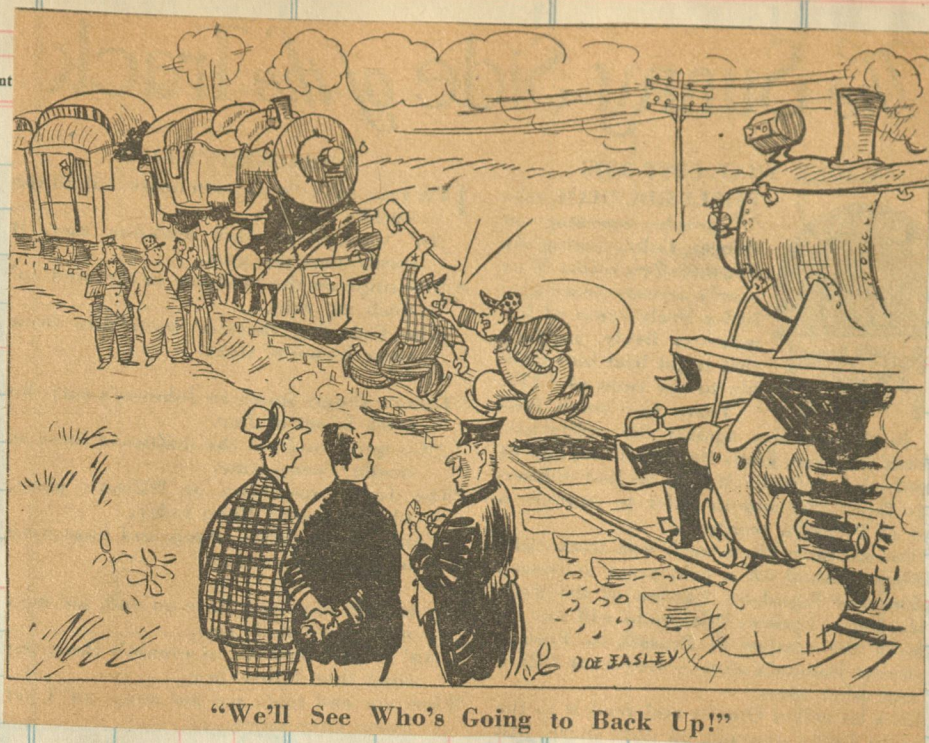
SALES OFFICES

McCormick Bldg. Chicago, Ill.
Finance Bldg. Philadelphia, Pa.
Munsey Bldg. Washington, D. C.
Starks Bldg. Louisville, Ky.
53 Oliver St. Boston, Mass.
Title Insurance Bldg. Los Angeles, Cal.
Merchants Bank Bldg. St. Paul, Minn.
Railway Exchange St. Louis, Mo.
Santa Fe Bldg. San Francisco
Henry Bldg. Portland, Ore.
Kearns Bldg. Salt Lake City
50 Church St. New York
4th Nat'l Bank Bldg. Atlanta, Ga.



EDGEWATER STEEL CO.
PITTSBURGH, PA.



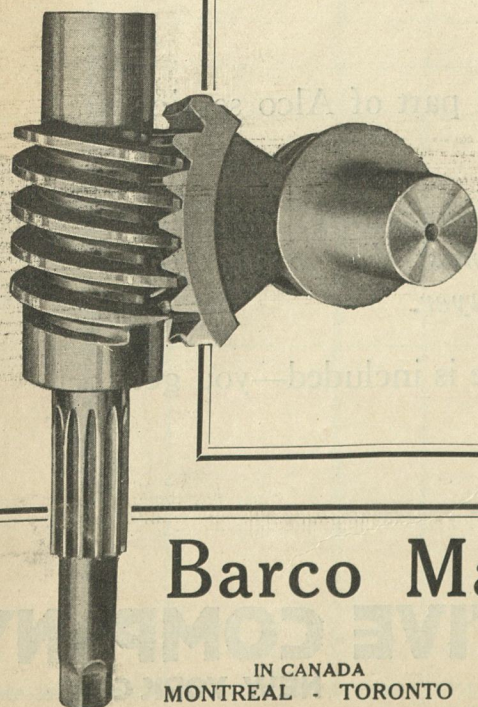
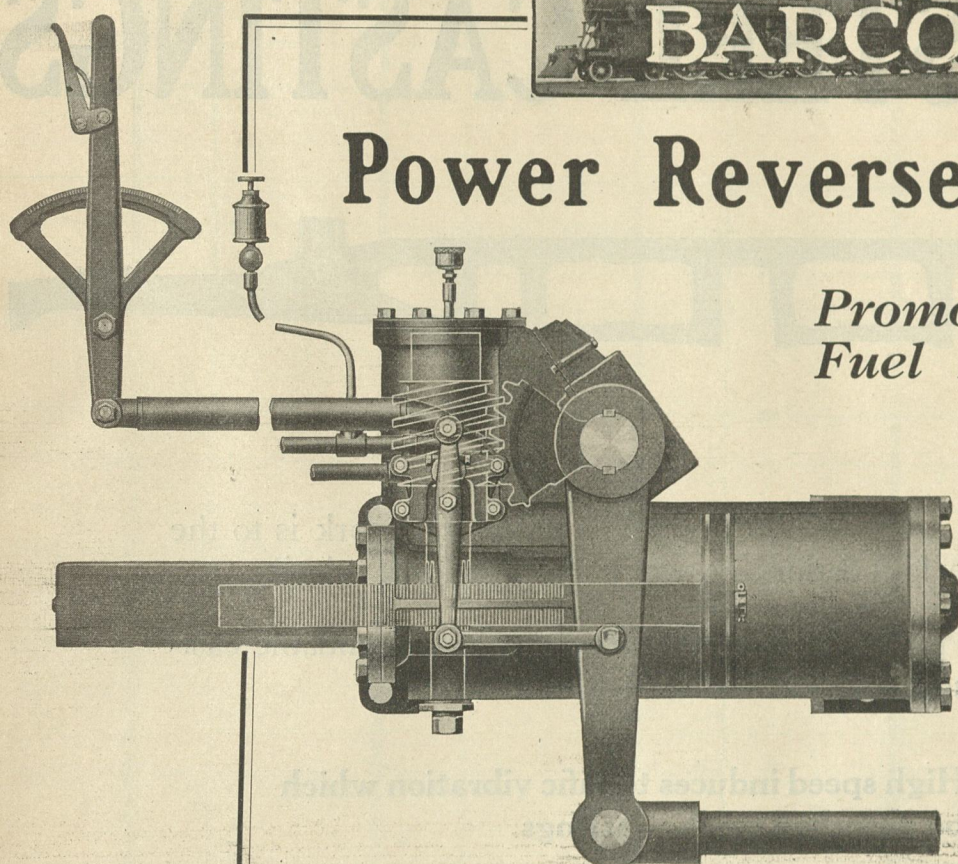


"We'll See Who's Going to Back Up!"



Power Reverse Gears

Promote Greater Fuel Economies



THE amount of coal consumed by your locomotives reflects in unmistakable figures the accuracy with which the proper point of cut off for various operating conditions is maintained.

You can eliminate all guesswork as to whether your locomotives are working at the most economical point of cut off, by equipping them with the Barco Power Reverse Gear—the gear that will not creep or float. This gear can be depended upon to maintain the exact setting of the valve gear as indicated by the quadrant lever in the cab.

The worm and gear mechanism, shown in the illustration at the left is the distinctive feature of the Barco Gear which makes this possible. No balancing pressure is required—for the worm automatically locks the gear in any desired position. In other words—the worm operates the gear but the gear cannot operate the worm.

That's why Barco Power Reverse Gears promote greater fuel economies and assure increased locomotive operating efficiency.

Specify Barco Power Reverse Gears for your next locomotives—it is an investment that will yield large returns in increased operating economies and lower maintenance costs.

Barco Manufacturing Company

CHICAGO, ILL.

IN CANADA
MONTREAL - TORONTO

THE HOLDEN CO., Ltd.

IN CANADA
WINNIPEG - VANCOUVER

U-LOY STEELS

Cut down replacements

When a crank pin or an axle breaks,—or a reciprocating part gives way,—then idle engine hours follow. Money is lost. Replacements must be made.

U-LOY Steels cut down replacements. They give parts greater strength, enabling them to stand more severe strains. Reciprocating and Revolving Parts, Axles, Rods, Springs, Crank Pins, Draw Bars, Valve Gears, Bolts, and other parts made of U-LOY Steels last longer. Fewer replacements are necessary. In addition, the parts are lighter. A saving in weight is made. Hammer blow on track and bridges is reduced.

U-LOY Steels have figured prominently in recent locomotive construction. Our Railway Engineering Division has complete details. Any information regarding these recent achievements will be gladly supplied. Our Metallurgists, with years of practical experience, will work with you to determine the U-LOY Steel best suited to your needs.

UNITED ALLOY STEEL CORPORATION
CANTON, OHIO

New York	Chicago	San Francisco
Syracuse	Detroit	Indianapolis
Cleveland	Buffalo	Portland

Open Hearth and
Electric Furnace
U-LOY Steels are
furnished in:—

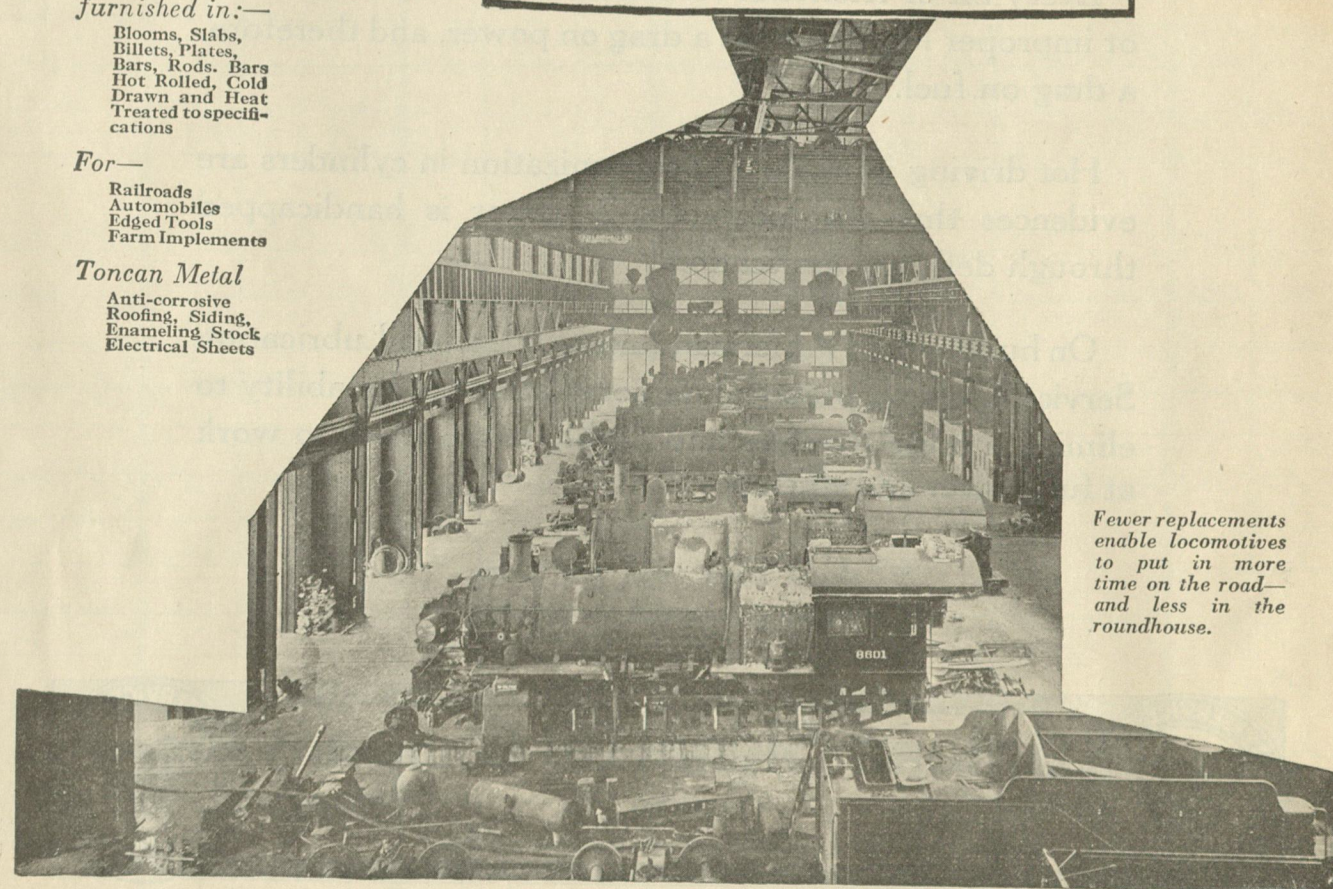
Blooms, Slabs,
Billets, Plates,
Bars, Rods, Bars
Hot Rolled, Cold
Drawn and Heat
Treated to speci-
fications

For—

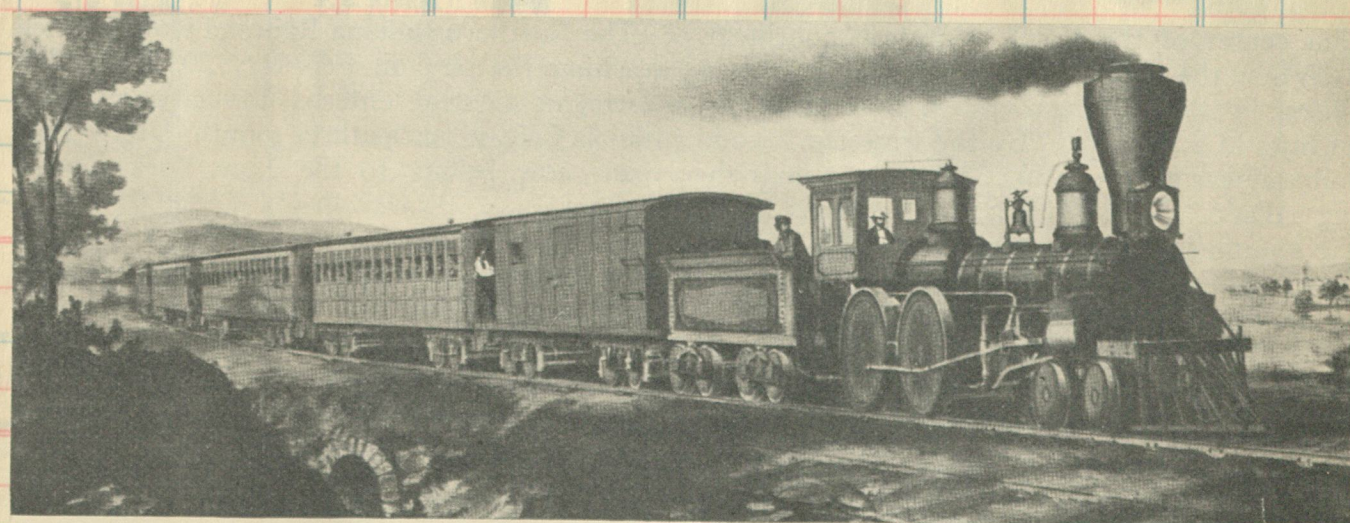
Railroads
Automobiles
Edged Tools
Farm Implements

Toncan Metal

Anti-corrosive
Roofing, Siding,
Enameling Stock
Electrical Sheets



Fewer replacements
enable locomotives
to put in more
time on the road—
and less in the
roundhouse.



THE EXPRESS TRAIN—A Currier and Ives print of 1859, reproduced by courtesy of the American Steel Foundries.

I CAN remember
When I was a boy
Lying on a grass-carpeted hillside,
In the warm, lush air of early summer
Watching the heavy trains roll by—
Puffing, snorting, wheedling engines
Pulling each a caravan of romance.

I can remember
The magic mystery of names,
The sounding sonorous syllabic titles
Boldly flaunted from drab brown cars.
Down the corridor of years
I see them yet.

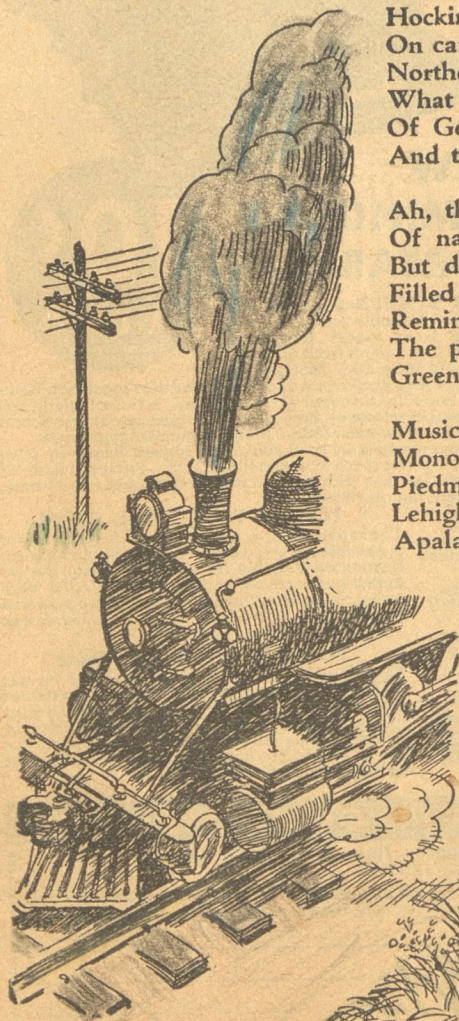
The Santa Fe, road of the Holy Faith,
Redolent with the smell of cordite

From the barking guns of the James Boys;
Hocking Valley, painted in white
On cars, black as the coal they carried;
Northern Pacific, Great Northern, Great Western;
What dreams of Piutes, Shoshones, Cheyennes,
Of General Custer and Wounded Knee Creek
And the Little Big Horn!

Ah, the magic mystical music
Of names unknown
But dimly remembered from other sunny days
Filled with music . . .
Reminiscent of far-off places and
The pull of the open road,
Green fields—greener because far away.

Musical, melodious, romantic names like
Monongahela, Dominion Atlantic, and Lackawanna,
Piedmont & Northern, Tidewater & Southern,
Lehigh Valley and the Denver & Rio Grande,
Apalachicola Northern and the Bangor & Aroostook.

Alabama Central, Big Four, Nickel Plate,
Duluth, South Shore & Atlantic,
Chesapeake & Ohio, the Grand Trunk,
The Seaboard Air Line—what a name!
Cairo & Kanawha, the Cimarron
& Northwestern,
Abilene & Southern, Boston & Maine,
The Amador Central and the Blue Ridge
And the Dover & South Bound.

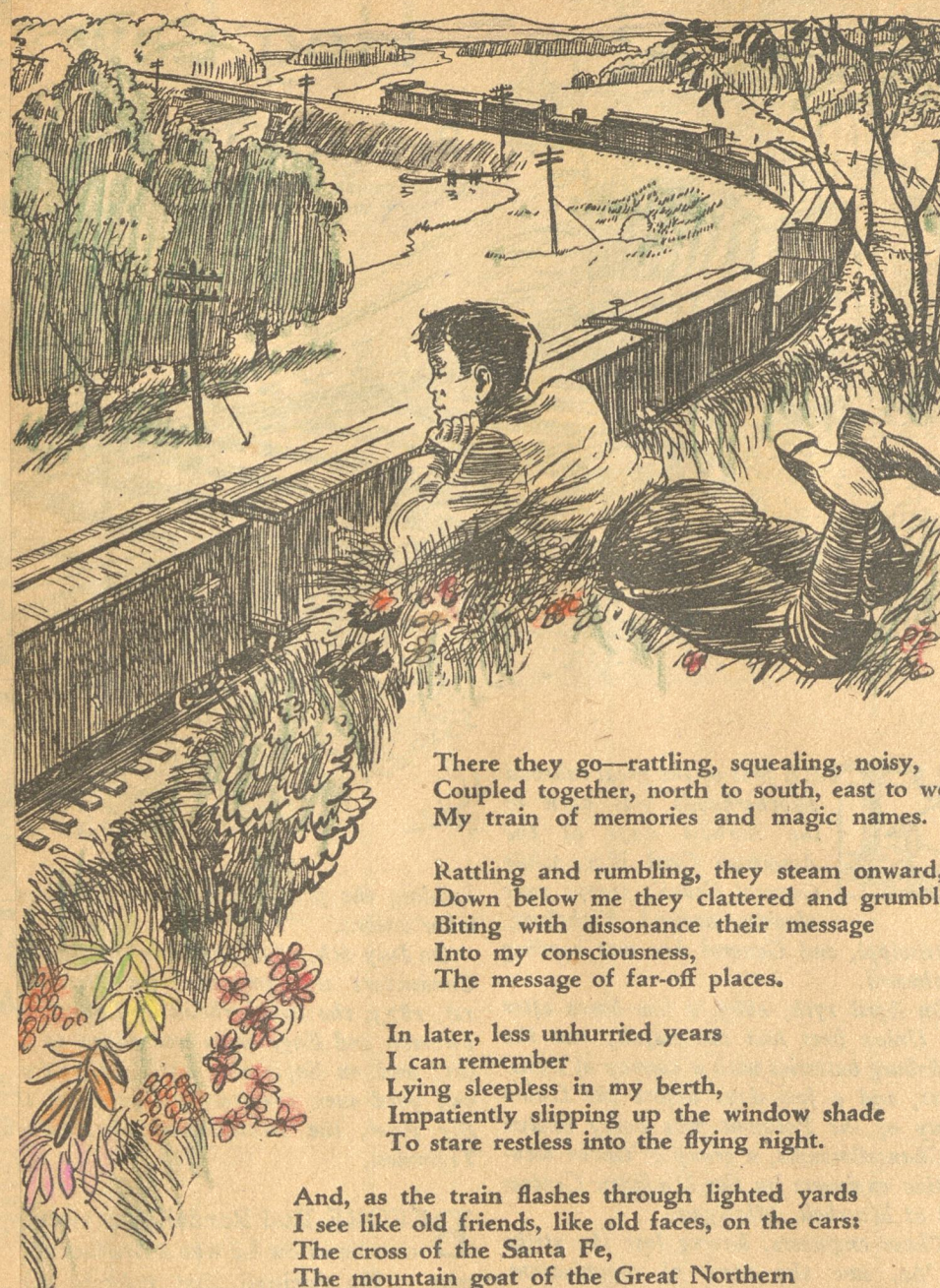


4

Box Cars

By BRIAN
MOORE

ILLUSTRATED BY JOSEPH EASLEY



There they go—rattling, squealing, noisy,
Coupled together, north to south, east to west,
My train of memories and magic names.

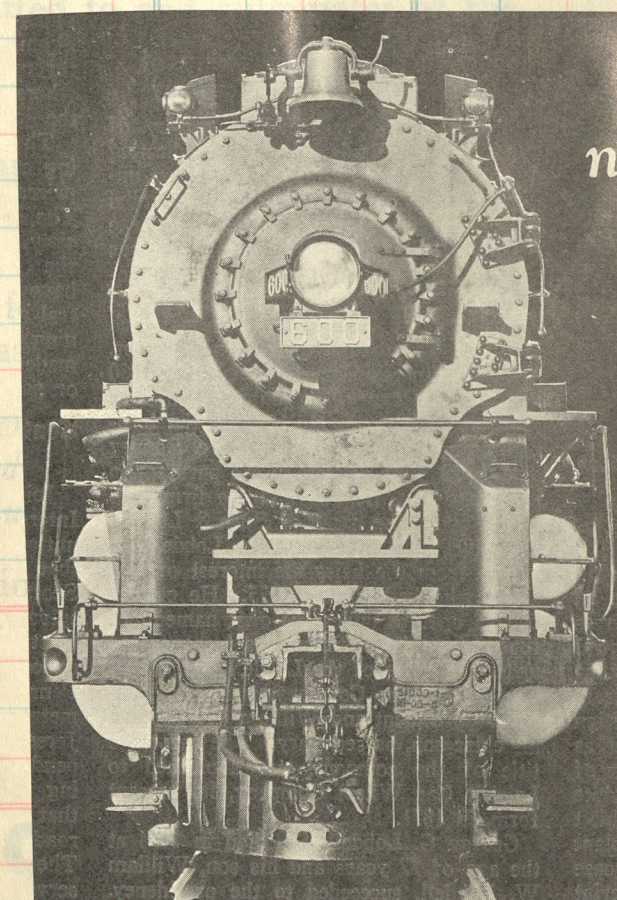
Rattling and rumbling, they steam onward,
Down below me they clattered and grumbled,
Biting with dissonance their message
Into my consciousness,
The message of far-off places.

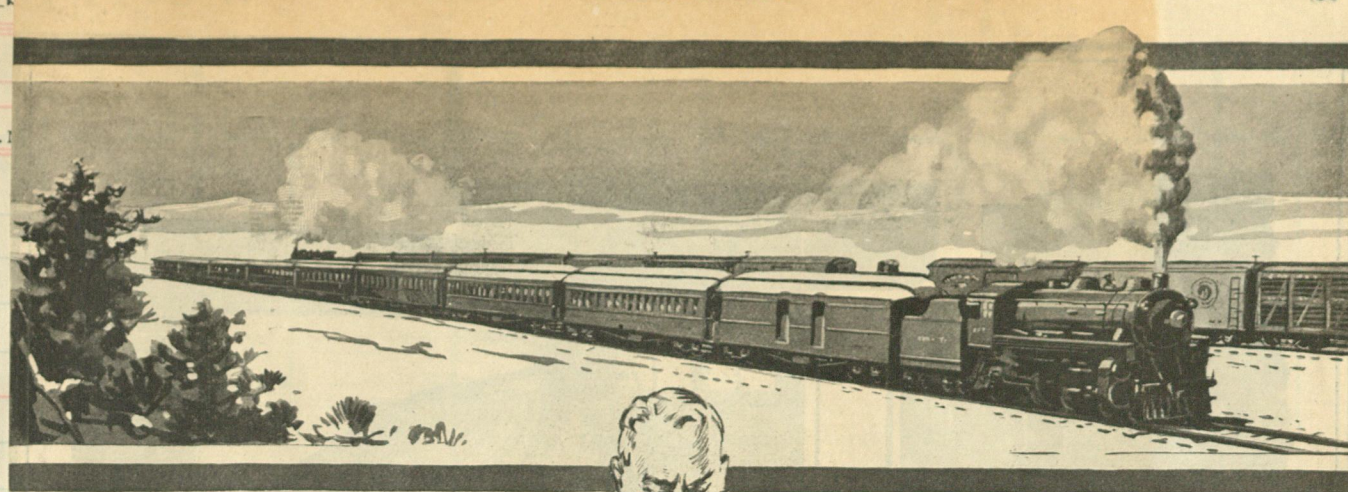
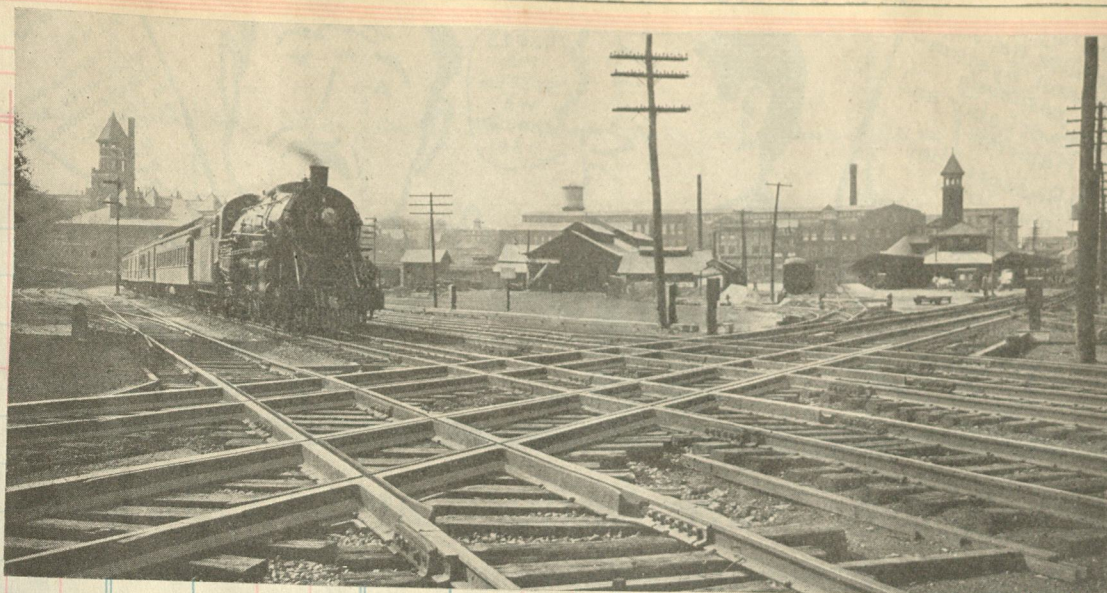
In later, less unhurried years
I can remember
Lying sleepless in my berth,
Impatiently slipping up the window shade
To stare restless into the flying night.

And, as the train flashes through lighted yards
I see like old friends, like old faces, on the cars:
The cross of the Santa Fe,
The mountain goat of the Great Northern
And the bold white Hocking Valley
On the black coal cars;

And I can remember a boy on a hillside
Dreaming of far-off places,
Watching, untroubled, the magic caravan below him.
Dreaming through the lush warm days of early summer.

5





MORE WORK from the Operating Dollar

EVERY railroad officer wants more powerful locomotives. Power to haul a few more cars in freight trains, power to make schedules with passenger trains.

Velvet is the word to represent the increased earning power due to the extra cars. Operating money is spent when the train reaches the terminal. It is not an investment bringing returns later, like investments in track, bridges or machinery. You must get all you

can out of it while the trains are in motion.

Locomotive capacity often depends upon the ability of the boiler to make steam. Particularly is this true of the engines built ten and more years ago, that are struggling to keep up with heavier train loading.

To these, as well as to new locomotives, Arches mean more power because they exact more steam from every ton of coal.

Ask for our Bulletin, "No. 4 on Time"

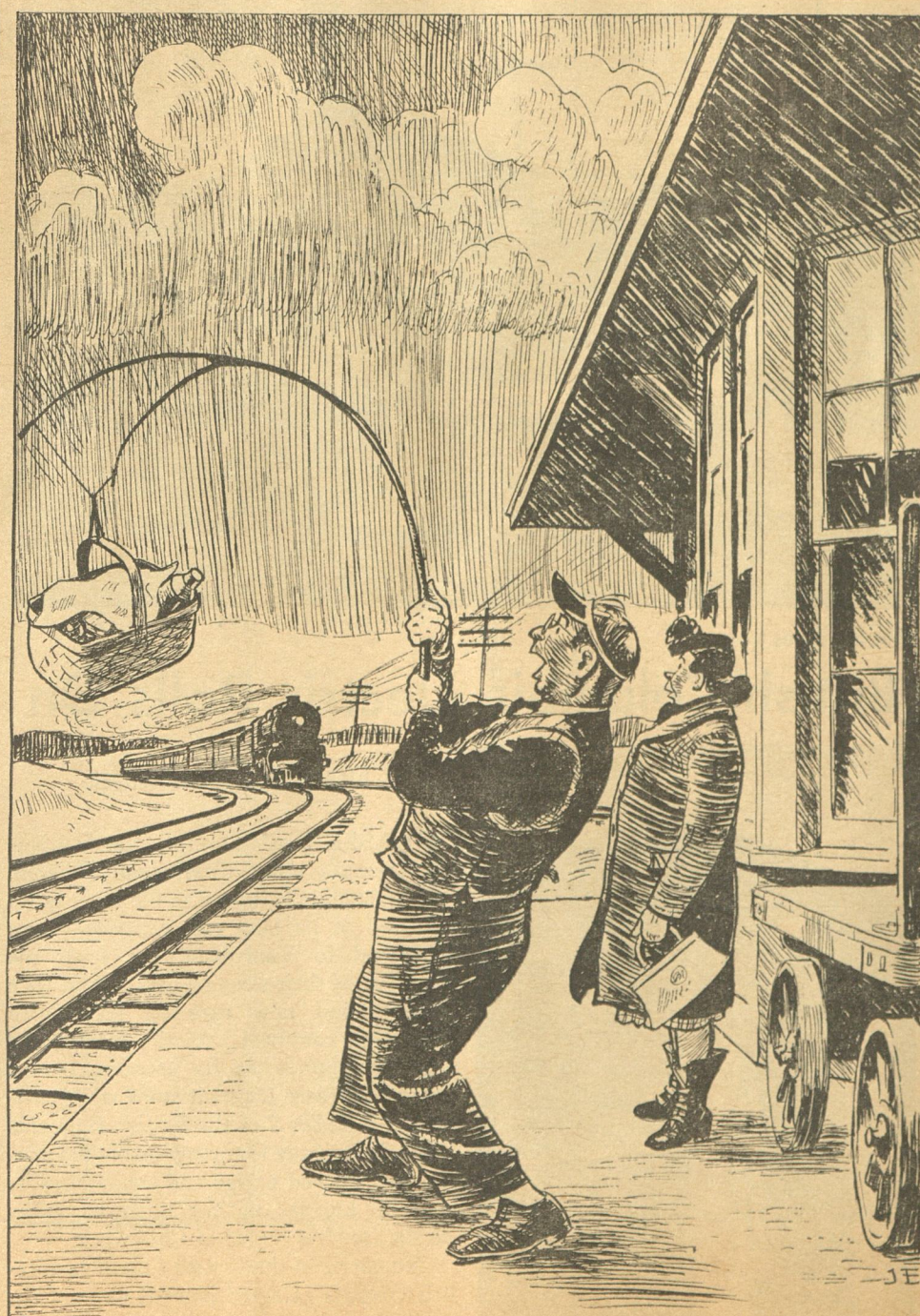
AMERICAN ARCH COMPANY, Inc.

Locomotive Combustion Engineers

17 East 42nd Street
NEW YORK



McCormick Building
CHICAGO



Not On the Wheel Report

By JOSEPH EASLEY

"I'll try it, Mam, but I'll bet it's against some rule or other!"

December 19, 1925

RAILWAY AGE

75

SEVEN WORKS
RAMAPO-AJAX-BLITZ
HILLBURN, NEW YORK
NIAGARA FALLS, N.Y.
CHICAGO, ILLINOIS
EAST ST. LOUIS, ILL.
PUEBLO, COLORADO
SUPERIOR, WISCONSIN
NIAGARA FALLS, ONT., CANADA

Ramapo Ajax Corporation
RAILWAY TRACK MATERIAL
Switch Stands, Frogs,
Switches, Crossings,
Guard Rails, Clamps, etc.
for steam, mine and
industrial railway tracks
MANGANESE WORK A SPECIALTY
SALES OFFICES AT ALL WORKS
Main Office, HILLBURN, N.Y.

**Ashton High Grade
Pop Valves—Steam Gauges**
the quality standard for over 40 years
Exclusive features insuring greatest
efficiency and durability
THE ASHTON VALVE CO.
New York, Boston and Chicago

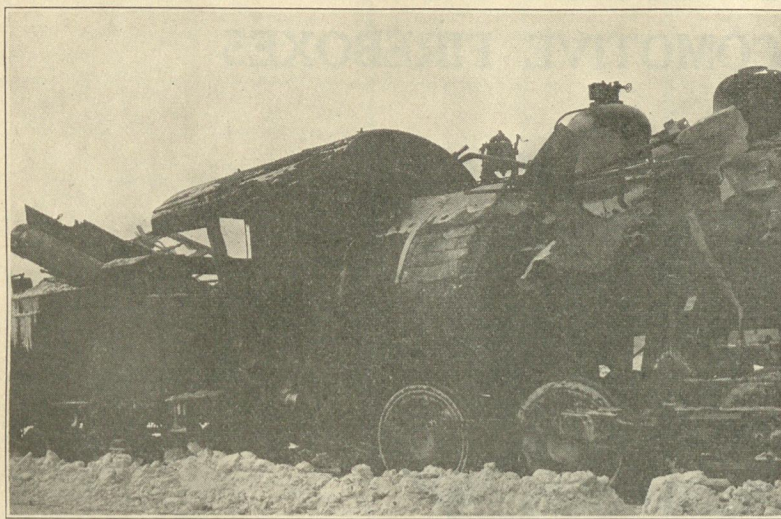
BUFFALO BRAKE BEAM CO.
Brake Beams, Auxiliary Sup-
ports, Adjusting Carriers and
Guards for Brake Beams
NEW YORK AND BUFFALO

Long Bell
Douglas Fir Lumber and Timbers; Southern Pine Lumber and Tim-
bers; Creosoted Lumber, Timbers, Posts, Poles, Ties, Guard-Rail Posts,
Piling; Southern Hardwood Lumber and Timbers; Oak Flooring; Cali-
fornia White Pine Lumber; Sash and Doors; Box Shooks.
THE LONG-BELL LUMBER COMPANY
R. A. Long Building Lumbermen since 1875 Kansas City, Mo.

American Water Softener Company
Fairhill P. O. Station, Philadelphia, Pa.
**SPECIALISTS FOR 20 YEARS IN
RAILROAD WATER PURIFICATION**

THE ELECTRO-MOTIVE CO.
GAS-ELECTRIC
MOTOR CARS
LOCOMOTIVES
POWER PLANTS
CLEVELAND, OHIO
See two page advertisement in October 3rd issue.

DISASTERS LIKE THIS



Are Positively Prevented by
Installing the

Ohio Low Water Alarm

Positive in action.
Simple in principle.
Sturdy in construction.
Easily installed.
Not affected by scale or weather.
Reset without engine delay on the road.
Cannot be reset while water is low.

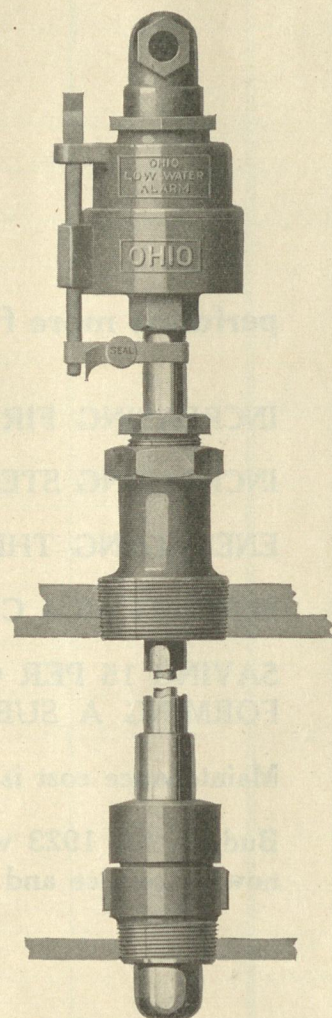
Motive Power Officials:
Safety Committees:

We would appreciate an opportunity to furnish you with complete description, application drawings, etc., or—better yet—let our Engineer bring one of the alarms into your office and tell you all about it.

A Service Test Will Convince You

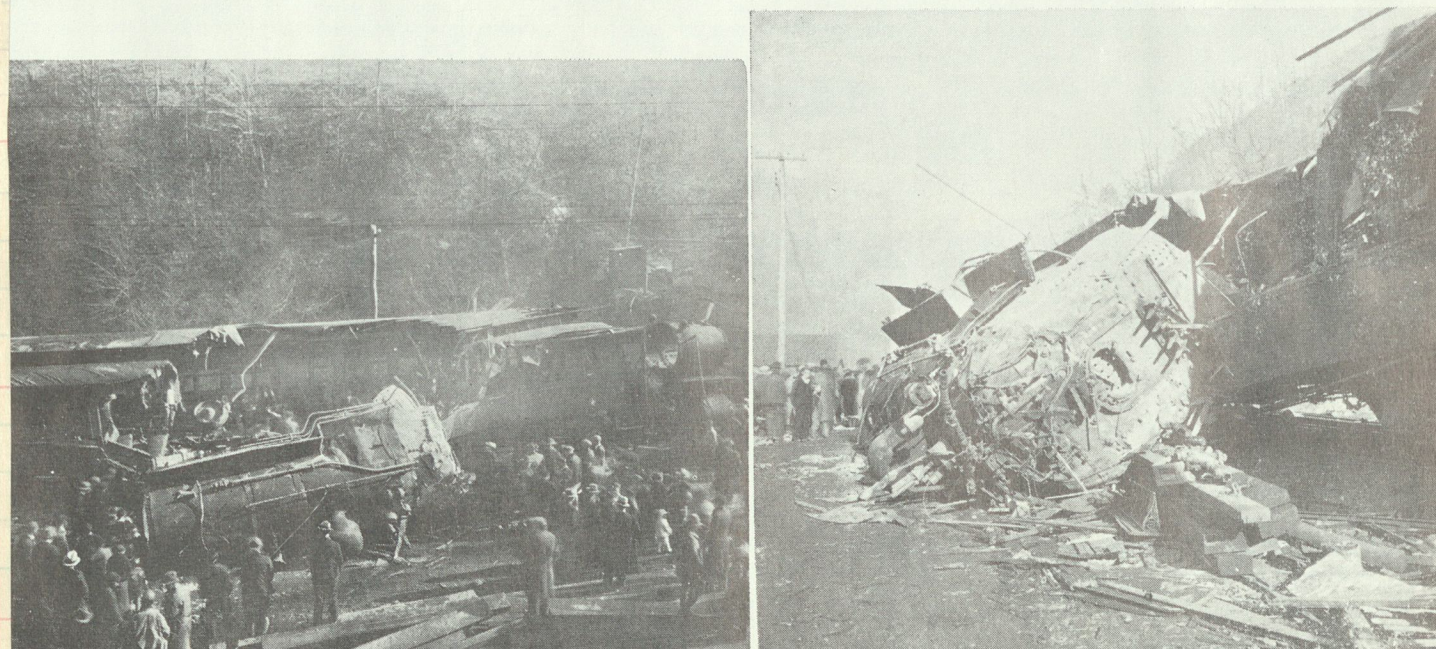
THE OHIO INJECTOR COMPANY
OF ILLINOIS

1437 Monadnock Block CHICAGO, ILLINOIS

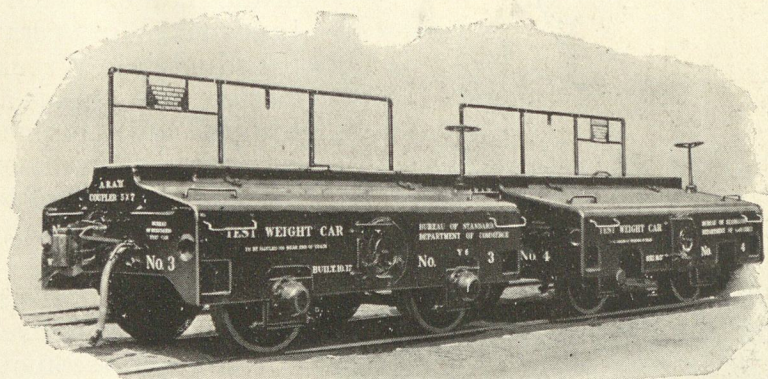


EYELESS IN GAZA: A Chicago & Eastern Illinois Mikado tipped off a single line track near Pimento, Ind., on Aug. 15, 1936, after the boiler burst open.

TWO DAYS AFTER CHRISTMAS 1934 a car load of miners and their families were returning to their homes and jobs on the company-owned railroad of the Elkhorn Piney Coal Mining Company. Without any warning the locomotive's boiler burst violently, hurled into the air, and fell heavily into the first wooden coach, squashing it like an egg. Seventeen people inside were crushed to death, and forty-three were badly injured in this accident, which happened near Powellton, W. Va.



SOUTHWARK
SCALE WEIGHT TEST CARS
are Standard Equipment on the Largest Railroads



TEST CARS USED BY THE U. S. BUREAU OF STANDARDS

*We build a complete line of Hydraulic and Power Tools for Railroad, Locomotive and Boiler Shops.
Hydraulic flanging, forging, bushing and wheel presses.
Power punches and shears, plate planers, bending rolls, etc.*

LET US SEND YOU OUR CATALOG

SOUTHWARK FOUNDRY and MACHINE CO.
400 Washington Avenue
PHILADELPHIA, PA.

Clos. No. Sold

American RAIL-ROAD Fence and American STEEL FENCE Posts

Absolute Right-of-Way
Protection

Illustrated Catalogue Free

**American Steel & Wire
Company**
CHICAGO-NEW YORK

FREIGHT CAR REPAIR WORK

We are equipped with the shop facilities and experienced labor to repair and build Railroad Freight Cars in our large new plants at Sharon, Pennsylvania, and Kansas City, Kansas.

We can give prompt service in the fabrication of underframes, center sills, draft arms, and similar car construction.

PENNSYLVANIA CAR COMPANY
SHARON, PENNSYLVANIA

New York St. Louis Kansas City Tulsa
Houston Casper San Francisco Beaumont

A.R.A. Standard "D" Couplers

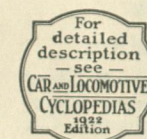
Pitt Couplers
Penn Couplers
for Cars and Locomotives

Pitt Pivoted Couplers

Designed on Proper Principles especially for
Passenger Train Cars.

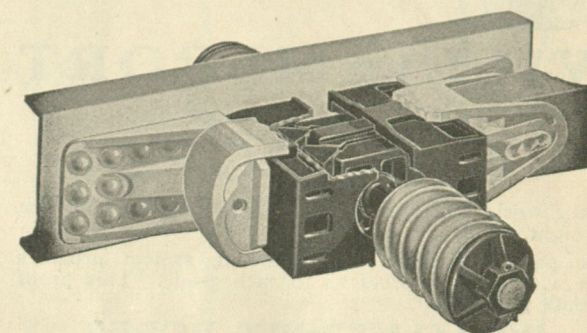
Acid Open Hearth Forging Ingots
and Billets

Rolled Steel Bars



THE McCONWAY & TORLEY CO.
Pittsburgh, Pa.

CARDWELL FRICTION DRAFT GEAR



UNION DRAFT GEAR COMPANY

CHICAGO OFFICE M'CORMICK BLDG.
CANADIAN OFFICE TRANSPORTATION
BUILDING MONTREAL

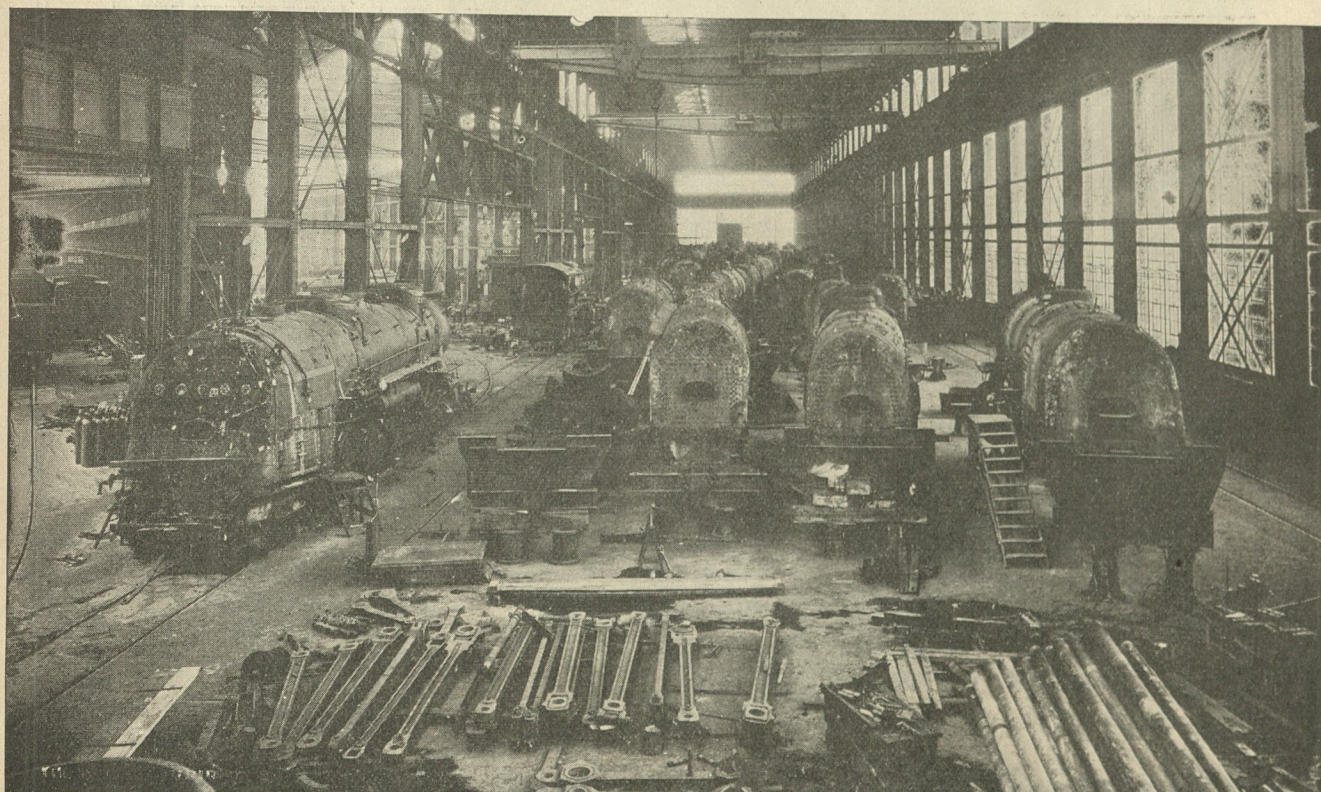
For detailed description see Car and Locomotive Cyclopedias, 1922 Editions.

November 10, 1923

RAILWAY AGE

49

MORGAN



ERECTING ROOM IN LOCOMOTIVE SHOP 95' 0" x 900' 0"

Showing 58 locomotives stripped and in process of repair. Have had as high as 72 locomotives stripped in this building at one time.

Have You Locomotives "Waiting For Repairs"

Why not take advantage of our service, and clean out those long lines of idle locomotives "waiting for repairs."

Ten of the leading roads have already taken advantage of our facilities, and we are rapidly turning their idle locomotives into money earning service.

We have the finest equipped shop in the country for repairing and rebuilding heavy railway locomotives of all types and sizes.

Our present capacity is nine locomotives per week, which is being increased. Can we interest you in our service?

The Morgan Engineering Co.
Alliance, Ohio

Designers, Manufacturers and Contractors
Electric Traveling Cranes, Rolling Mill Machinery
Ordnance, Steel, Shipbuilding and Forging Plants Complete
Rock Crushers, Special Machinery for Any Purpose

Chicago
122 So. Michigan Ave.

New York
120 Broadway
Pittsburgh
1420 Oliver Bldg.

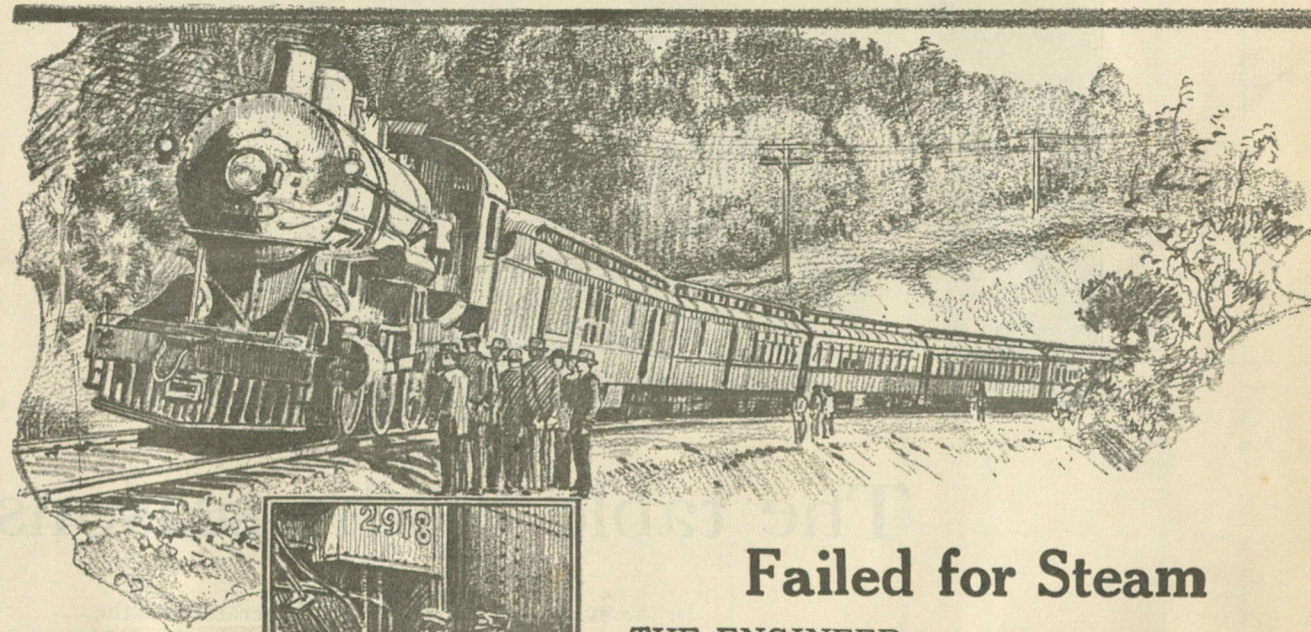
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34

RAILWAY AGE

February 17, 1923

The maintenance of service prestige demands welded flues in every engine. Electrically welded flues would have prevented this engine failure



Failed for Steam

THE ENGINEER:

Leaky Flues — she won't steam and we're forty minutes late already. She's not a welded engine. If she was, it wouldn't happen. She was tight leaving the terminal, but as soon as we hit these grades, the flues began to leak. I had to work her extra hard today on account of the two "deadheads" so the flues just opened up.

We're apt to have these failures right along, if they don't give us welded engines on this division — all engines oughta have welded flues!

THE ENGINEER IS RIGHT:

Tubes and flues welded to the back sheet are an all important factor in reducing locomotive steam failures.

Better steaming engines, longer flue mileage and reduced maintenance cost at the engine terminal result from the electric welding of flues.

G-E Arc Welding Sets are essential for this class of boiler work.

Bulletins describing G-E Welding Equipment and the G-E Welding School sent on request. Write our nearest office.

General Electric Company
General Office
Schenectady, N.Y.

Sales Offices in
all large cities

43B-664

RUNAWAY!

BY E. JOHN LONG

IT was the night of January 14, 1953, 11 o'clock. A chill winter wind swept through the half-empty concourse of old South Station in Boston.

"Board!" A lantern highball flashed. Engineer Bill Matta gave diesels 0779 and 0770 the throttle, and the throbs of awakened power surged across the yard as the 13-car train snaked through the interlocking.

No. 173, the *Federal Express*, was off on time for its 459-mile 8-hour 40-minute overnight run to the nation's capital. It was a routine beginning to what apparently was a routine trip.

But at 8:38 the next morning in the Union Terminal in Washington the *Federal* was to turn into a hurtling juggernaut, a train out of control.

The *Federal* halted briefly at suburban Back Bay, and then the lights of Boston faded into the night as it picked up speed along the New Haven's curving Massachusetts main line. At Readville it was four minutes late; but the *Federal*, greyhound of the "loose-schedule" night expresses, has a reputation for picking up lost time. It pulled into Providence, R. I., a good 10 minutes ahead of schedule, a neat trick to do in 43 miles.

Inspectors noticed nothing wrong with the *Federal* during its 15-minute stop at Providence. It pulled out

of the depot at 12:05 a.m., on time.

But then the flagman noticed a few sharp jerks—brakes were sticking somewhere on the train. It seemed to be the rear two cars. He told Conductor Ralph Ward, who pulled the communicating cord. The *Federal* ground to a stop at Kingston Swamp west of Kingston, R. I., 27 miles out of Providence.

Ward made a rapid check along his train. The brakes on the two rear cars were very hot. He bled them off and signaled for a series of brake tests. Meanwhile Engineer Matta had sent the fireman back to see what was going on. The fireman decided that everything was all right and returned to the engine, telling Matta that it was

Tenschert Studio.



Tobey Talks Out of Turn

Tobey starred as chief comic relief. Nuts—from all angles we can think of.

How does Tobey or anybody else know what progress the SCC has or hasn't made in a report?

And just what did the Kefauver commission do toward cleaning up crime in New York? It put on a good TV show, true; and as a sort of by-product of the performance Frank Costello and Jim Moran went to jail.

But the committee recommended no legislation, as the SCC is expected to do when ready; and with all due respect to Senator Kefauver, we think SCC Chairman Joseph M. Proskauer and his colleagues are better investigators.

Tobey, the New Hampshire ham actor, might be good as a 'Way Down East' character on a sponsored TV show designed purely for entertainment. Otherwise, we think New York got more than a bellyful of him the first time.

him, still ranks as the most sadistically cruel crime in my lifetime. Leopold should have been executed."

Adolf Birk, 68th Ave., owner

meat market: "Yes, because 28 years in jail is punishment enough for a crime committed by a boy in his teens. It was a sex crime, primarily. Leopold is now 47. At this age sex impulses are not so apt to contribute to this type of crime. He's a brilliant man and can be a useful citizen."



Brooklyn: I was shocked and outraged when I read that Voice letter from J. P. recommending that "your lousy, stinkin' slimy Brooklyn should be towed into the Atlantic along with the Bums." But I have always excused ignorant statements when they came from ignorant persons. You are obviously one of the dumb people that we more intelligent persons have to put up with. So I find it in my heart to forgive you.

ARLINE BELKIN.

THE LOST DECADE

Queens: So, last Jan. 8, this bushy-headed Mr. Sims of the Orphan Annie comic strip stated that from Jan. 8, 1814, to date was a difference of 149 years. I ask you—is this 1963?

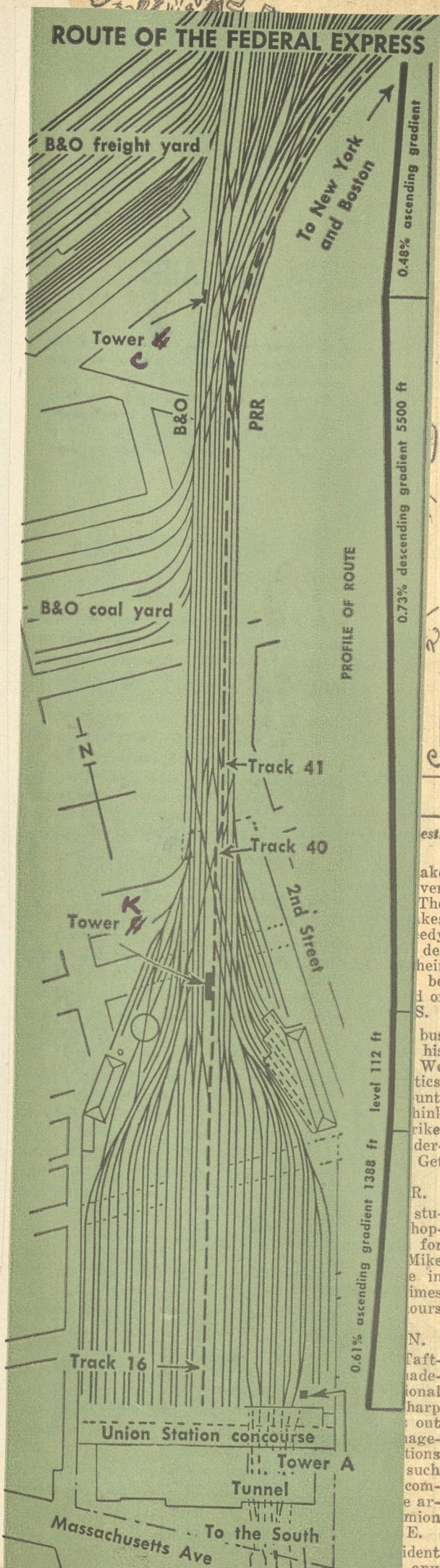
OSCAR FLOWE.

and delivery conditions have improved 50% since the buses got off the streets. The public at last wakened up to this wasteful duplication of transportation.

PETER CUNNINGHAM.

UNCLE SAM'S PAYROLL

Bronx: I recently learned that the Government intends to pay girls out of high school \$3,175 yearly as stenographers. Isn't that the limit when girls like me 10 or 15 years of service. I wonder the taxpayers of the Civil Service start out with aries. I for



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Total
Add Working Fund
Total to be Accounted for
Cash to Agent
Agent's Signature
Cash to next Seller
Next Seller's Signature
Total Accounted for

The Federal was two miles out of Washington and hitting a mile a minute when Harry Brower notched in the GG-1's throttle and eased over the brake valve. "This isn't holding at all," he thought

O.K. to go ahead. But the train wouldn't budge.

Matta himself left the engine and found that the brakes on the first three cars were released but those beyond were jammed. He soon located the trouble—the angle cock was closed at the rear of the third car. The angle cock is the valve which closes the main brake pipe at each end of each car. With the valve closed, the brakes behind the third car were inoperative. Something or someone had closed the valve since the *Federal* had left Providence.

Matta figured the rear car brakes had remained off while the normal air pressure was in the trainline; but when air had leaked out and could not

be replaced from the engine, the brakes automatically had begun to take hold.

At any rate, it was an easy matter to open the valve again, which Matta did. In a few minutes all the brakes released. Conductor Ward, puzzled as to the cause of the trouble, was working his way forward, examining the brakes and other equipment of each car. Before he reached the troublesome third car he was told the difficulty had been found. The flagman was whistled in and the *Federal* proceeded, 56 minutes late. Matta promptly made up 11 minutes of the loss in the 86-mile stretch to New Haven, Conn., using the brakes several times. They worked fine.



no idea what was wrong, except that his brakes weren't holding. He gritted his teeth and hoped for a miracle. As his engine lurched past C Tower, Brower again yanked at the whistle cord. Raucous blasts, one after another in quick succession, shattered the morning air. To those who saw the heavy train racing into the complicated pattern of track it added up to the one word that railroaders dread most: *runaway!*

Let Brower describe the next few seconds: "When I came under New York Avenue I started to blow the horn on the engine to notify people that we couldn't hold the train, to scare them away from the platform. . . I was just hoping something would stop her. . ."

Back in the train, Conductor Thomas J. Murphey heard the warning whistle at about the same time that he realized the train was rolling altogether too fast. Murphey was in the ill-fated third car. As luck would have it he hastened to the front vestibule and opened the conductor's back-up valve. Had he gone to the fourth car or been in the fourth car or beyond and opened the valve, the train might have been slowed or perhaps even stopped when he let out the air from the line holding the brakes released in the last 13 cars.

As it was, Murphey unfortunately got no brake action at all. "There was no air in the line," he said. "I warned the passengers in this [third] coach to lie on the floor or hold their seats, that the train was out of control. That was the best I could do."

Brakeman Fred E. King, in the fourth car, was about to lock the toilet when a sudden swerve of the train threw him off his feet. "When I got myself straightened out . . . I headed

right back to the rear platform. I glanced outside and realized that we had no brakes and were not stopping. I made an attempt for that [emergency brake] valve on the platform. By that time we were coming into the interlocking right there at C Tower. It threw me around and I do not know whether I really did get that valve on. . . I could not stay on my feet, to be frank about it."

It is apparent that King did not succeed in opening the valve. Asked later if he heard the warning blasts from the engine, he was not sure.

Far back at the rear of the train Flagman John H. Meng heard no whistle, but he knew something was wrong when the brakes did not begin to grind. At the time he was in the center of the rear car, a sleeper. Because passengers were in the aisle preparing to leave the train, he was unable to reach the emergency valve at either end before the crash came. As the train whipped through a crossover "the car swayed violently . . . causing me to lose my balance," he said.

Thus far the train crew had been waging a lone battle to save the train and passengers. To make matters worse, the mile from C Tower to K Tower descends at a grade of 0.73 per cent. Engineer Brower felt he had operating brakes on the engine and maybe the head car. The rest of the heavy train seemed to be pushing them to destruction. He attempted to reverse the motors, but the overload relays blew and his last hope was gone.

As No. 173 rolled down the home stretch, however, Train Director Harry S. Ball in C Tower made a split-second decision. The *Federal's* route had been set up along main track No.

41, then through a facing-point crossover to track 40, which becomes station track 16. The stub of track 16 is in the exact center of the station's concourse. A worse possible target for a runaway could hardly be imagined!

Ball knew there was no way to line up a new route to shunt the juggernaut into a siding. Once the interlocking is set it takes several minutes to change the switches and signals. Ball had only seconds to act. He grabbed the phone. K Tower was just beyond the crossover. If the train hit the crossover too hard it might jump the track and plow into the tower.

John W. Feeney, train director at K, answered the phone. He heard Ball shout, "One-seventy-three's out of control! She's running away!" If anything more was said it was lost in the frantic bleating of the onrushing engine's horn. The train lurched drunkenly on the crossover, but it did not leave the rails. Onward it rushed, sparks flying from its engine's wheels.

Seconds were precious. Feeney snatched the phone to the station-master's office. Although it was slowing, the racing monster had only 1500 feet to go! When Clerk R. A. Klopp answered, the usually calm and imperturbable Feeney wasted no words: "There's a runaway coming at you on track 16—get the hell outa there!"

Klopp didn't wait to look. He knew the train was aimed right at where he and the others in the office were sitting. "I yelled at the others in the office. I ran into the telegraph room next door and shouted at them to get out. I ran out the door and saw the train bearing down just a few car-lengths away, and I yelled at the people standing at the gate," he afterwards told a reporter for the *Washington Star*.



Union Station after train broke barrier, crashed through floor.

Express Plows Into Capital at 50 m.p.h.; 41 Hurt

Washington, D. C., Jan. 15 (AP).—A crack express train, out of control and blasting an ominous warning, today crashed into Union Station and wrecked the huge building in the shadow of the Capitol.

One person was killed, but at least 41 persons were hurt, seven of them seriously. The engine mowed down the station master's office, swept away a newsstand and kept visitors from going out to the trains, demolished a big newsstand and plowed through the floor of the concourse to the basement.

As the Penn-

Express from

here at 8:30

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36, of 4126 43d

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fractures of the ribs

down.

railroad officials said only quick

action by the engineer, Henry W.

Brower, 66, and the crew saved the

wreck from turning into a major catastrophe.

The railroad said it could not explain why the air brakes on the 150-ton electric locomotive failed.

Saved by Horn Warning.

But it said that Brower, warning with his horn that his brakes would not hold and his train was out of control, enabled station officials to clear the concourse of persons who otherwise would be directly in front of the locomotive.

The railroad said injuries among the estimated 400 passengers on the train were lessened by warnings from crewmen to clear the aisles and keep seated.

The time, too, kept down the injuries. Often during the day the concourse, a block-long roofed

room that adjoins the waiting room, is jammed with friends and relatives of passengers.

This morning only a few were in the concourse.

Furthermore, the crowds who will be here for the Inauguration are just beginning to descend on Washington. Next Monday or Tuesday, the crowd will be so great not even a warning could clear the concourse.

"Tremendous Roar."

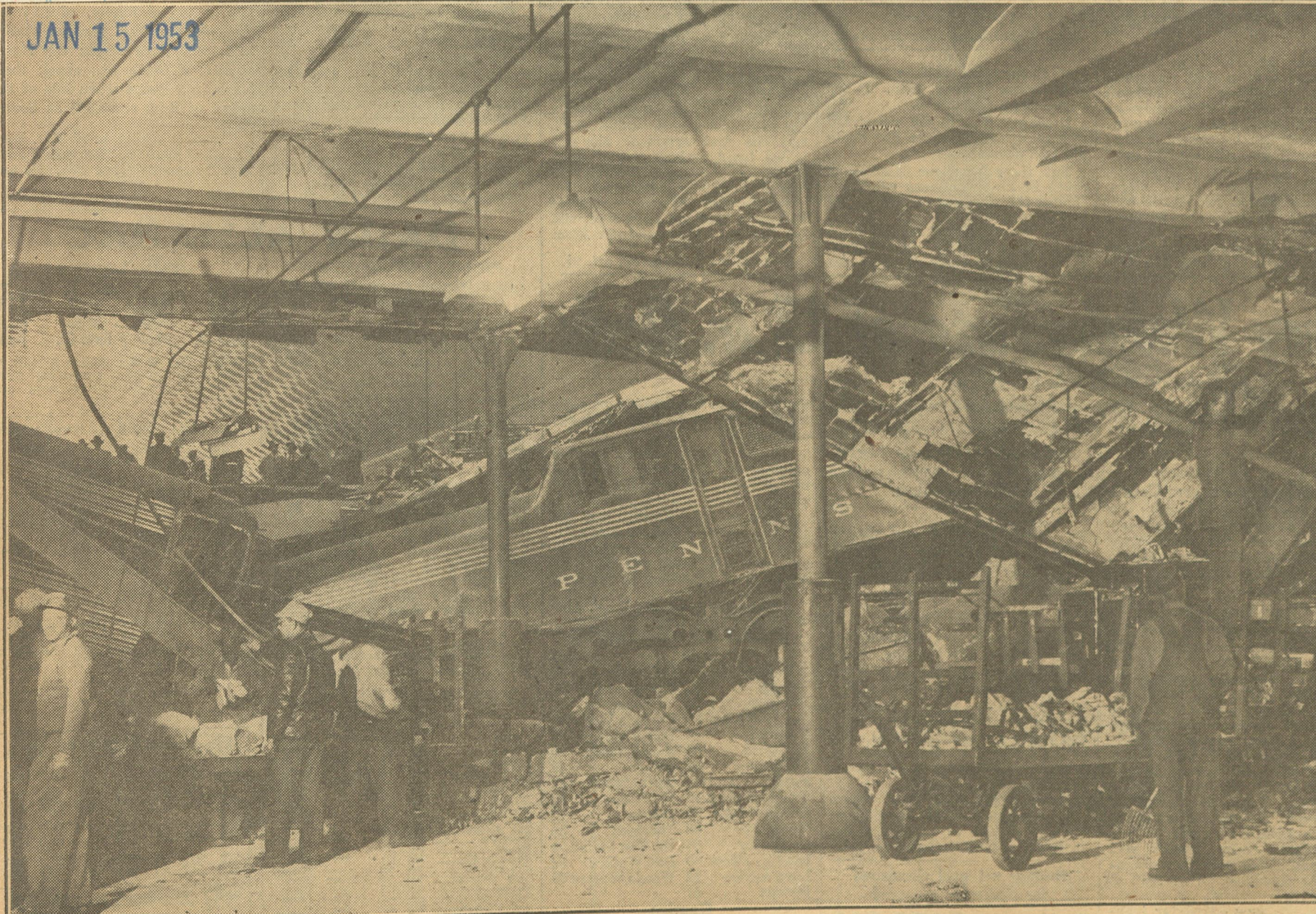
Some of the reactions show how hard the train hit.

J. A. Stenhouse, 41, Charlotte, N. C., architect, was waiting on the concourse.

"There was a tremendous roar,"

(Continued on page 4, col. 1)

JAN 15 1953



Train Rips Union Station.

Runaway locomotive and first car of Boston-Washington express rest in basement after falling through Washington's Union Station concourse. Train plowed through station at 50-m.p.h. when air brake failed and devastating progress was halted only by collapsing floor. Forty one were hurt, no one was killed.

—Story on page 3; other pictures in centerfold

(By Associated Press)

36, of 4126 43d

City, condition

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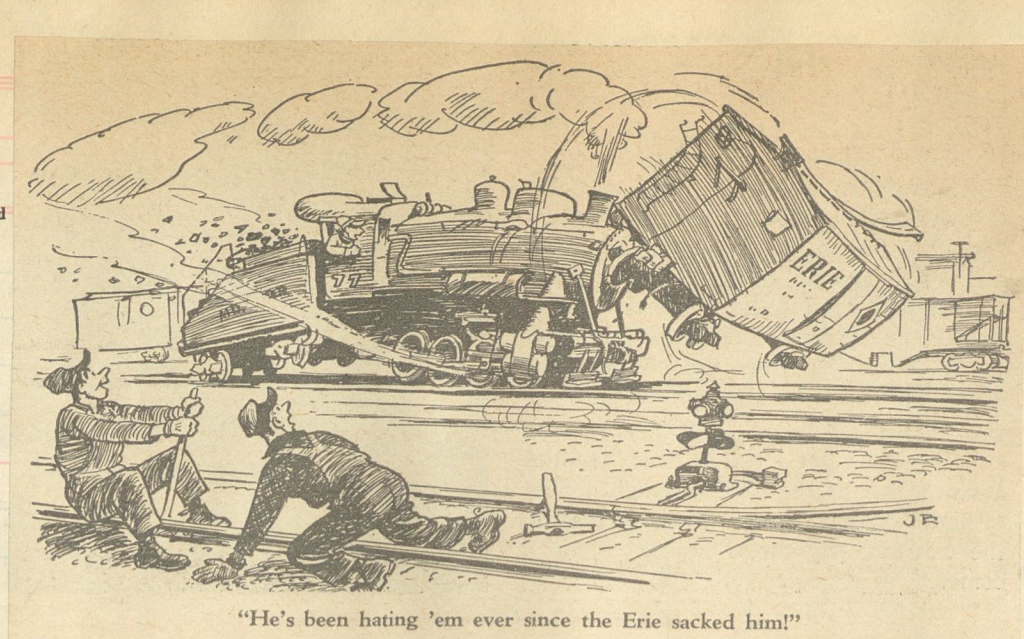
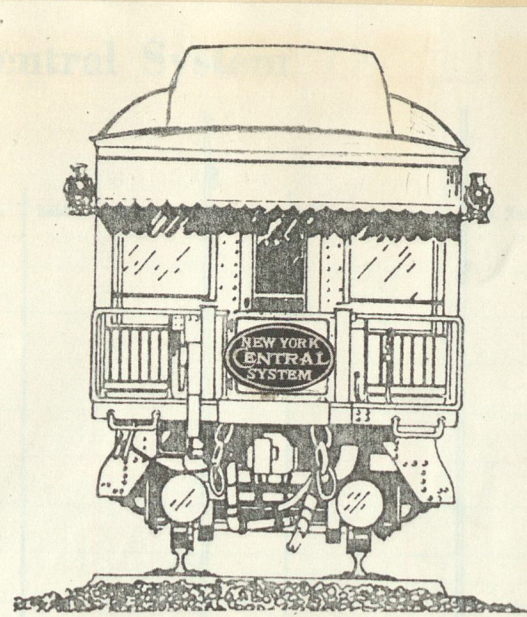
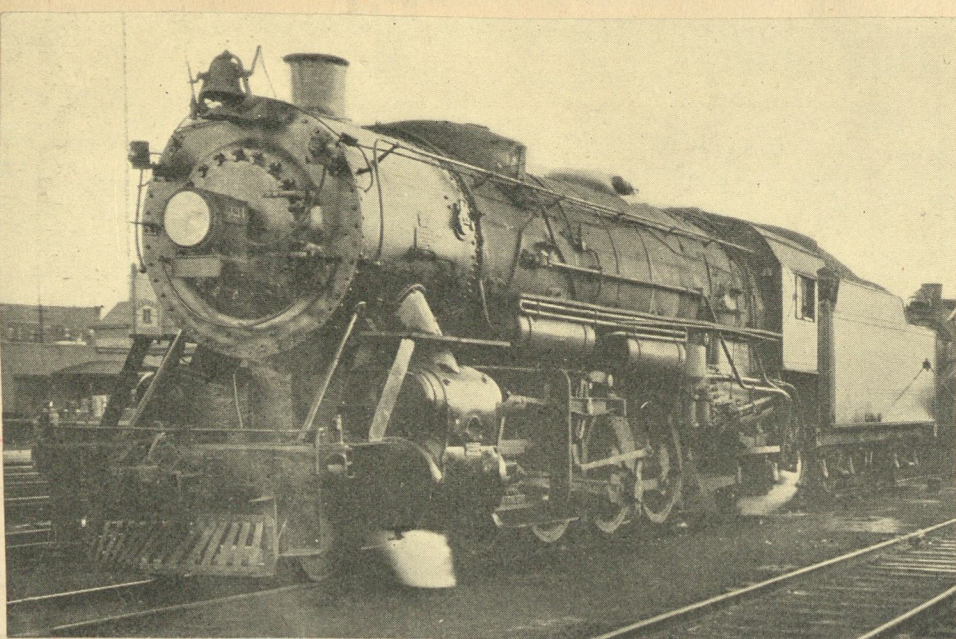
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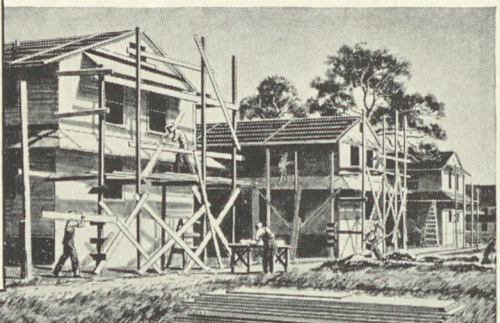
RAILROADS ARE READY

A factual report to the American people

What if the country is called upon to meet a real emergency this year — or next? How will our rail transportation system meet its responsibilities? How does the American railroad performance of 1941 compare with that during the World War?

A thoughtful public, facing a dangerous world situation coolly and realistically, is entitled to ask such questions — and equally entitled to honest answers. Here they are:

Bigger locomotives pull more freight. Unqualified statements that railroads have fewer locomotives and cars than in 1917 are meaningless. Today's locomotives average half again more powerful. Today's better freight cars hold a fifth more and travel 64% faster.

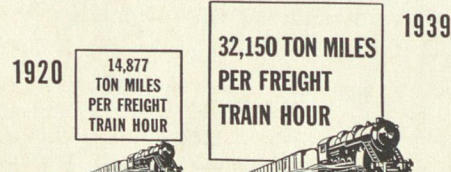


Housing a million men. For the new army camps, the railroads delivered nearly two billion board feet of lumber — 75,000 carloads — in 6 recent months. Work was never held up because of any railroad failure to deliver materials. Cars were loaded and unloaded promptly by shippers and contractors. There was not the least interruption of regular rail traffic.



It can't happen again! In 1917 ports and terminals were congested and transportation was slowed down because freight cars were used not to move goods but to store them. On just one order, 40 miles of cars clogged the tracks for weeks until a shipyard got ready to unload them. That won't happen again because close teamwork by the railroads, shippers and government agencies now keeps cars moving and gets them unloaded promptly.

Railroad efficiency more than doubled. That is the net result of larger engines and cars, longer trains, faster schedules, better signals, streamlined yards and greatly improved operating methods. In the peak year of 1929, the railroads hauled 84 million more carloads of freight than they did in 1918 although they had 60,000 fewer cars and 5,000 fewer locomotives.

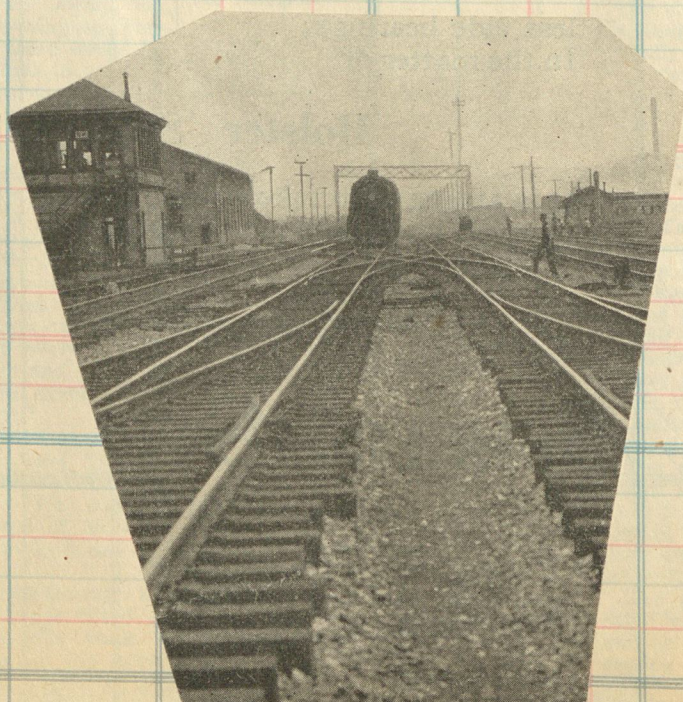


Whatever the demand — America's railroads, despite the hard times of recent years, are keeping fully prepared to meet the nation's transportation needs.

ASSOCIATION OF AMERICAN RAILROADS, WASHINGTON, D. C.

PERFECT SHIPPING A national campaign each APRIL to promote good packing, secure loading and careful handling of ALL shipments — sponsored by Shippers Advisory Boards. Avoid loss and damage. We can't afford to waste our national resources.

The Granite Railway Company, incorporated by the Massachusetts legislature March 4, 1826, and still in existence, was the first railway corporation actually to build and operate a railroad in this country. The Granite Railway, about 3 miles in length, was built by Gridley Bryant to convey huge blocks and columns of granite from the quarry in Quincy to Milton, on the Neponset River, for use in the construction of Bunker Hill Monument. The road was opened October 7, 1826. The roadbed was built of crushed granite; the sleepers were stone; the rails, set 5 feet apart, were wood capped with iron. Horses supplied the motive power for many years. In 1846, the company was authorized to use steam power and transport passengers and merchandise. In 1871, the Old Colony Railroad (now operated by the New York, New Haven & Hartford) acquired the right-of-way and extended the road to Atlantic Station, and passenger trains began running over the road on October 9 of that year.

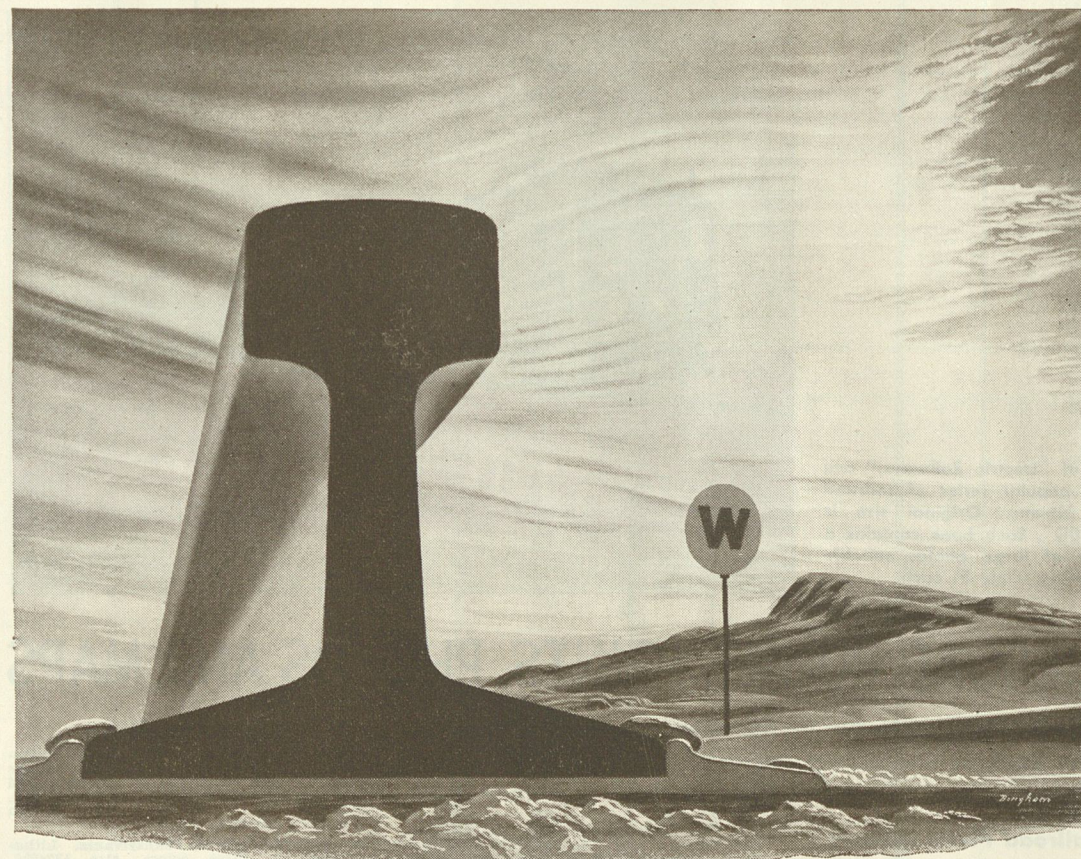
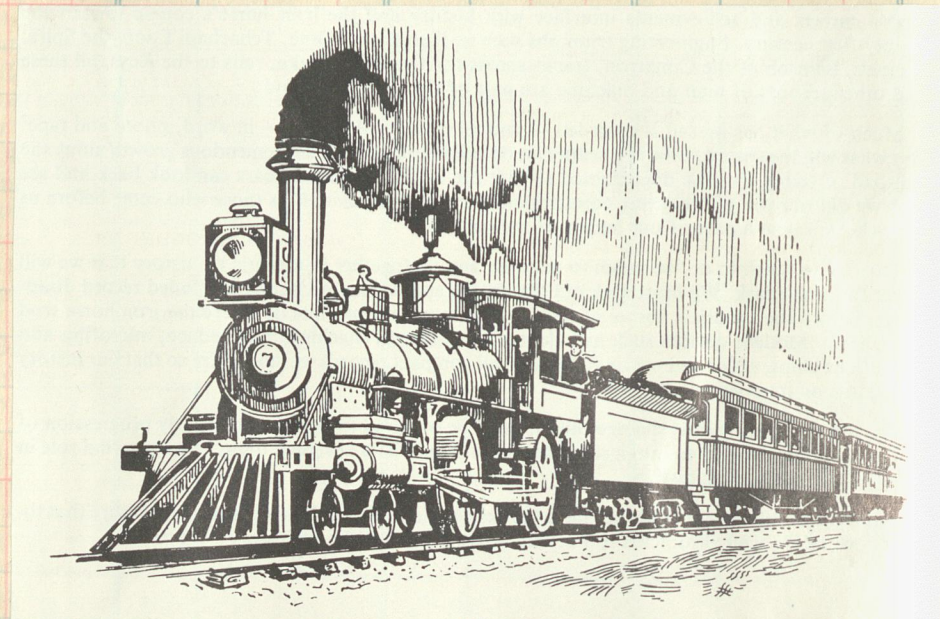


143. What is an average day's railway service?

For each day of 1939 the Class I railroads performed the equivalent of moving 913,546,000 tons of freight one mile and 62,075,000 passengers one mile, not to mention their extensive express and mail traffic. In providing this service, they performed the equivalent of moving 59,647,000 freight cars one mile and 7,935,000 passenger-train cars one mile. For each day of 1939 they provided 6,821,000 man-hours of employment and paid out \$5,439,000 in wages, \$974,459 in taxes, and \$2,455,000 for fuel, materials and supplies.

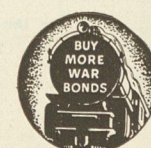
144. What are the average daily revenues of the railroads of the United States?

Revenues vary from year to year. In 1939, Class I operating revenues averaged \$10,945,400 a day.

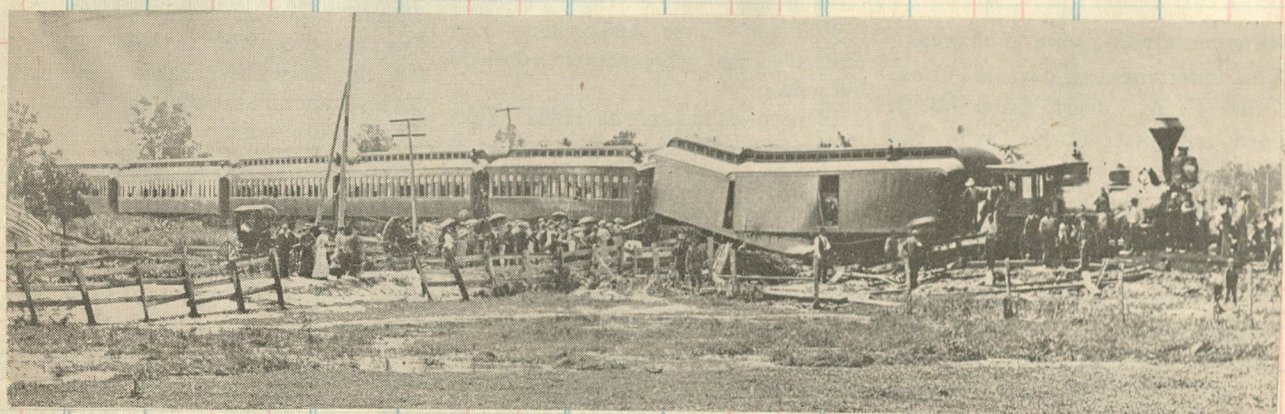
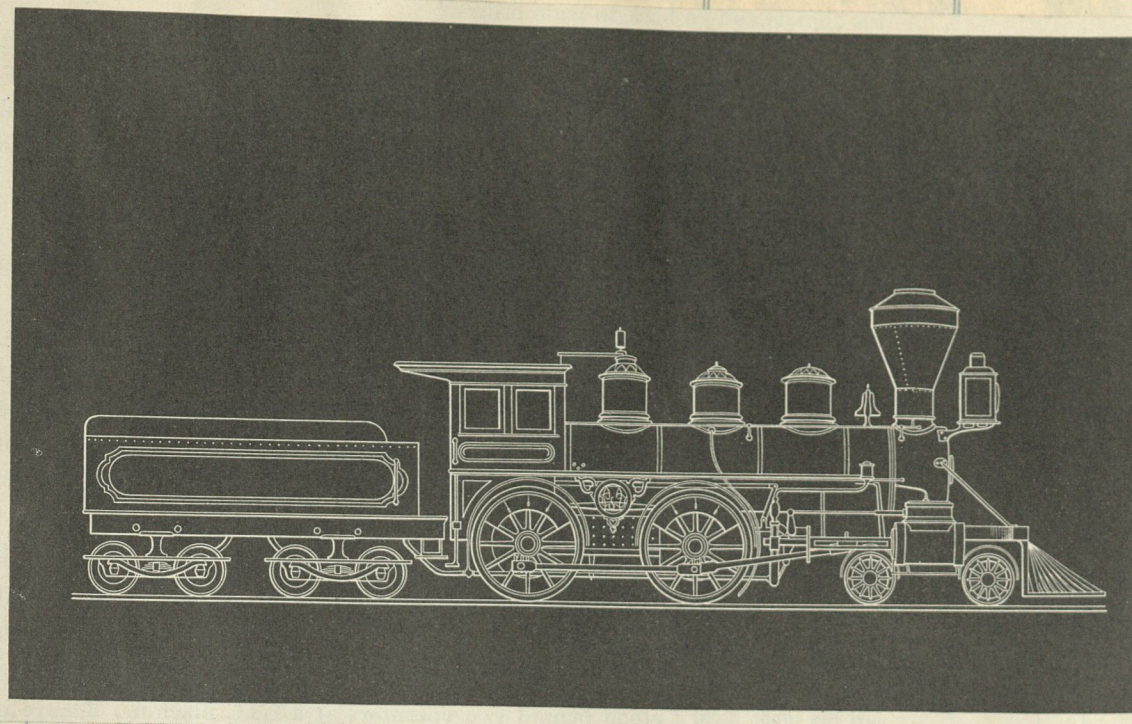


"HIGH IRON"

"High Iron" is one of America's not-so-secret weapons. It is a railroadman's term for the 230,000 miles of mainline track — built, paid for and kept up by the railroads — which knit America together. • Over these strong highways of steel moves America's might — three quarters of all intercity transportation, 90% of all war freight. • In this mass movement of freight — a movement that far exceeds anything moved before by any means of transport — lies a vital lesson. • The lesson is this: America needs and must have — for success in war, for prosperity in peace — the low-priced, mass transportation which only railroads can deliver.



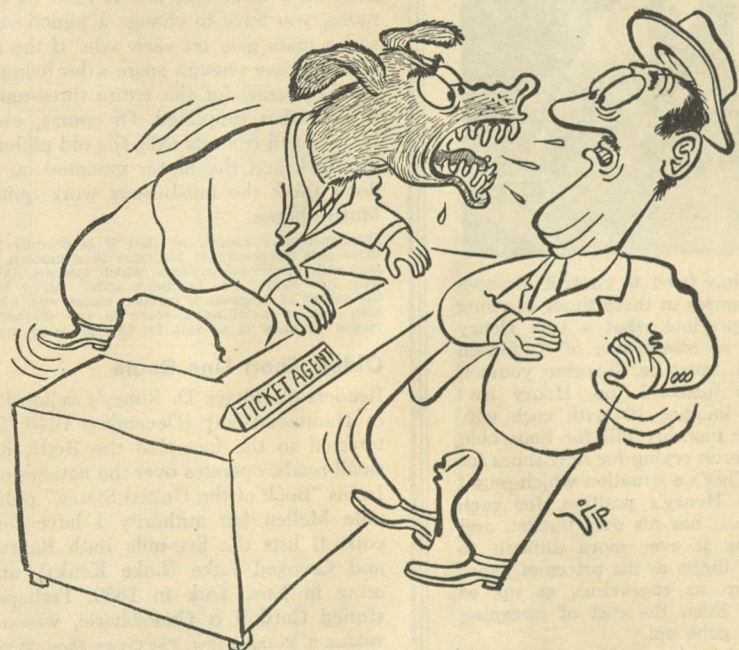
ASSOCIATION OF AMERICAN RAILROADS
All United for Victory



Whatta ya mean, friendly?

Just saying a thing is so doesn't make it so. We know that. Occasionally somebody will question our right to call ourselves the *friendly* Southern Pacific.

"How can you say that," he'll ask, "when one of your ticket agents practically barked at me once?"



Well, one swallow doesn't make a summer, and when you have 90,000 people running a railroad, you're bound to have some quick tempers and cases of stomach ulcers among them.

We wouldn't be human if we didn't slip up once in a while, even though we try very hard to prevent slips.

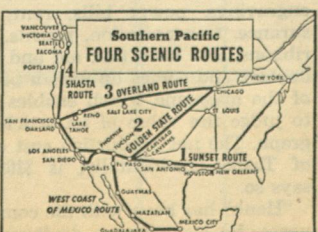
We call ourselves a friendly railroad because you seldom see a Southern Pacific engineer who doesn't wave at folks, or a conductor who doesn't like to pat children on the head and give them a fist-full of discarded seat checks to play with. Or a Southern Pacific man or woman who won't go out of his or her way to perform an act of human kindness above and beyond the call of duty.

If you're planning a trip to California, we'd enjoy having you as a guest on our trains—trains like the *City of San Francisco*, the *Lark* and the *Daylights*, which we think are just about as wonderful as anything on wheels. Our service now is much faster and better than before the war.

The little map shows where we go

S·P The friendly Southern Pacific

L. C. IOAS, Passenger Traffic Manager, 310 S. Michigan Ave., Chicago 4, Illinois



LOCOMOTIVE CRANES
CLAM SHELL BUCKETS - SHIPBUILDING CRANES
CAR DUMPERS PILE DRIVERS
The McMYLER INTERSTATE CO.
CLEVELAND OHIO

Yes-it's a McMyler Interstate

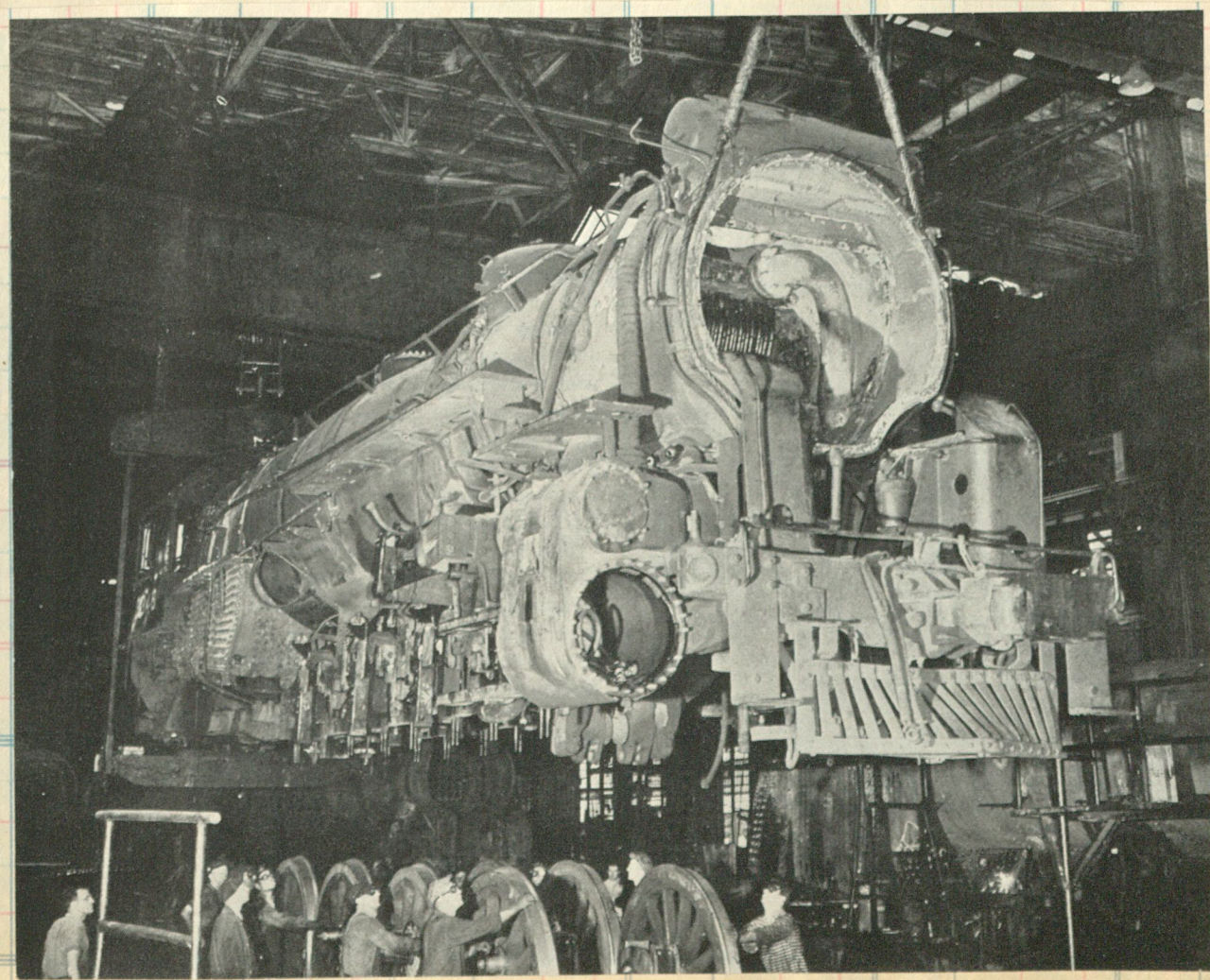
Several type "J" Excavators were used in digging the New York State Barge Canal and by their operation proved their entire adaptability to the service. This crane equipped with a 70' boom and a drag scraper bucket will handle an immense amount of material and deposit same 50 to 60' either side of the machine. Some excavators are capable of performing only this one operation. Not so with the Type "J". This machine may also be used for handling a fall block, clam shell bucket, driving piles or switching cars, more important still, it will accomplish any of these operations as well as a machine designed for some one purpose only. This machine will bear investigation. Take it up with "Crane Headquarters."

Write our nearest office today.

THE McMYLER INTERSTATE CO.
CLEVELAND, OHIO

BRANCH OFFICES
1756 Hudson Terminal Building,
NEW YORK CITY
812 Edison Building
CHICAGO, ILL.

DEPENDABILITY



Join the parade to "AMERICA'S FAVORITES"

YELLOWSTONE

GRAND TETON



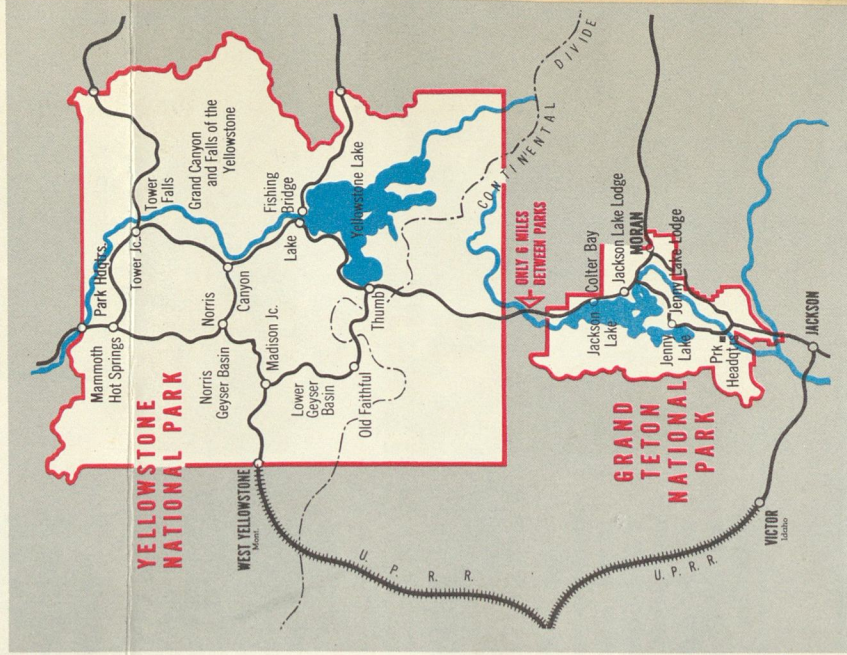
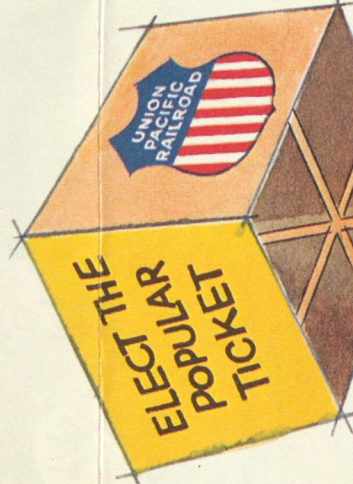
OUR PLATFORM... MORE FUN FOR EVERYONE!

A double measure of vacation pleasure—that's the ticket... sell both Yellowstone and Grand Teton National Parks in one package.

The mysterious magic and natural beauty of Yellowstone; the rugged majesty of the Teton in the legendary Jackson Hole country appeal to all ages.

Again in 1959—as in 1958—the U. P. led the field in rail travelers to the Parks through the West Yellowstone and Victor, Idaho gateways. And no wonder! It's the finest service available to these great neighboring National Parks.

So set your "sales" to catch the wind of popularity. Route your patrons via Union Pacific.



Lower Fall of the Yellowstone River—and many other Park attractions—offer unusual shots for camera fans.



No Worries!
Room accommodations and sightseeing assured

In Yellowstone—Old Faithful Inn, Lake and Mammoth Hotels, and the new Canyon Village (motel type units) all offer fine accommodations. In Grand Teton there's the fabulous Jackson Lake Lodge with rooms and guest cottages. At nearby Jenny Lake Lodge there are newly decorated modern guest cabins.

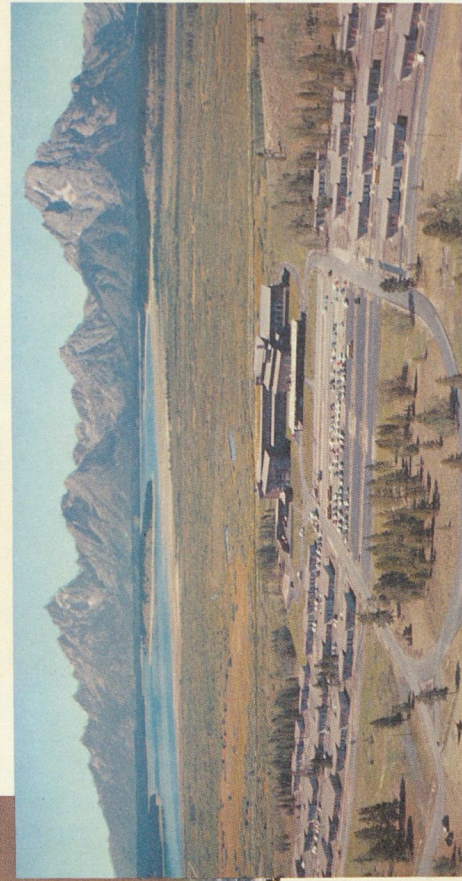
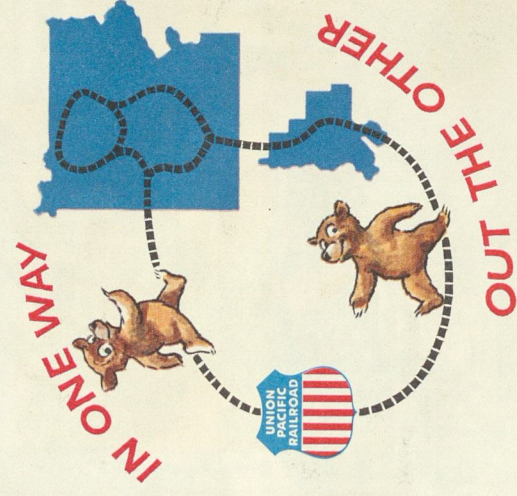


PULLMANS AND COACHES DIRECT TO BOTH GATEWAYS INTO THE PARKS

Consult your U. P. timetable or Official Guide for information on how through trains from Chicago, St. Louis and Pacific Coast make convenient connections at Ogden, Salt Lake City or Pocatello for West Yellowstone and Victor gateways. Convenient connecting service, too, from Texas points via Denver and Pocatello.

GET OUT THE CROWDS WITH FAMILY FARES ON UNION PACIFIC

You can sell parents on the idea that a visit to the National Parks has a wonderful educational value. And money-saving Family Fares for husband and wife, or for family groups, should clinch the sale.

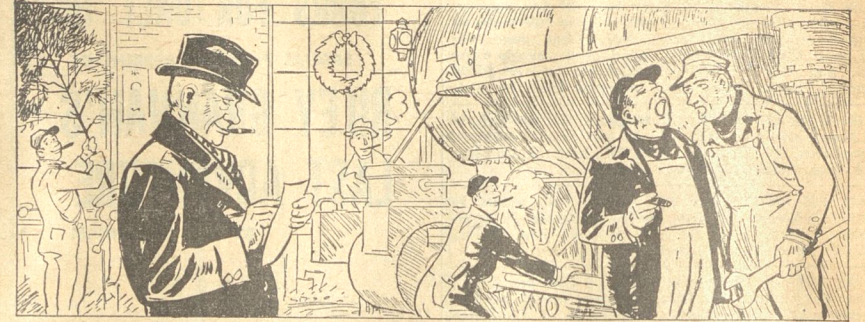


(Above) From Jackson Lake Lodge there's a marvelous view of the Teton.



(Left) The Stockade cocktail lounge, Jackson Lake Lodge.

(Right) One of the attractive guest rooms in the Lodge.

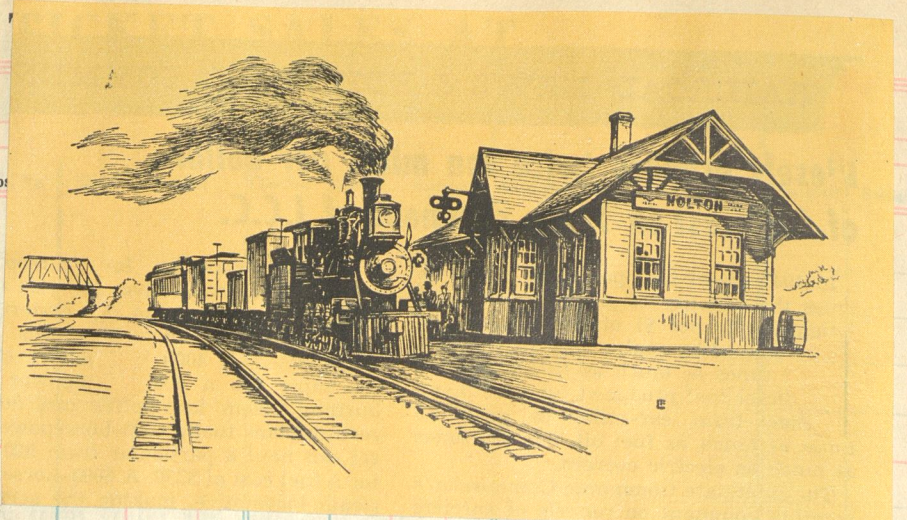


ROUNDHOUSE CHRISTMAS EVE

(This doggerel, based on Clement Moore's famous poem, "The Night Before Christmas," has become a sort of folklore classic. The anonymous author was reputedly a night roundhouse foreman on the M-K-T at Oklahoma City.)

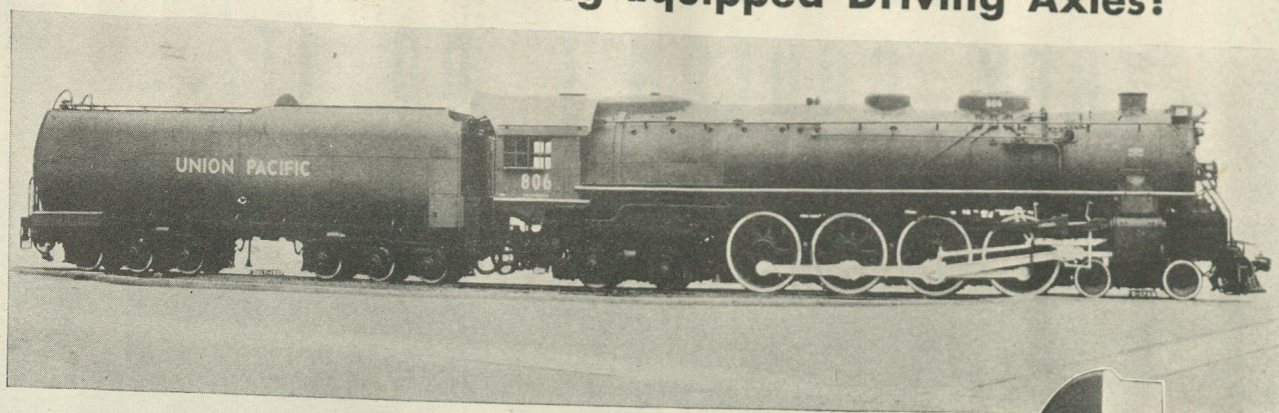
'T WAS the night before Christmas and the Four Twenty-six Had come to the pit in a terrible fix. Her flues were all leaking, her grates would not shake And something was radically wrong with the brake. The hogger was cussin'—I mean he said, "Pshaw!" The machinist was handing out bundles of jaw. When out in the office there arose such a clatter, I hurried right out to see what was the matter, When what to my wondering eyes should appear But our little old foreman, receiver at ear? And the way he was roaring through that telephone Would make old Niagara sound like a faint moan. "No, you can't have her," were the first words I heard, And there came from the wire a long-drawn-out word. "I'll give you that engine at ten forty-five, But call up again and I'll skin you alive!" He must have hung up and was turning around When in through the doorway there came with a bound The callboy, a switchman, and Slim, the hoghead. They had come to inform me that the switch engine's dead. He spoke not a word—there was nothing to say— But hastened to get the gang out of the hay; And finally, by raving and ranting and swearing, He managed to get them to do some repairing.

With this matter settled, he sought his armchair In hopes it would keep him from tearing his hair; But alas for our hopes, with engines about, He was roused from his chair by a terrible shout. He sprang to the door and then 'most threw a fit, For an engine was piled in the turntable pit; But his despair and his anger were soon put aside, For in through the doorway there came with a slide A funny old fellow so lively and quick, He knew in a moment it must be Saint Nick. "Pray be of good cheer," were the glad words he said. "I've brought you a present from one who is dead. 'It's a gift from St. Peter, who keeps Heaven's gate. Now I must be going, for I'm two hours late." The foreman then carefully opened his gift And the words that he read gave his spirits a lift: "To each roundhouse foreman this cold Christmas Eve I'm sending a present I hope you'll receive. It's a pass into Heaven for each one of you, With the privilege of bringing your family in, too. "I've seen all your woes from my seat up on high And I know you're deserving a pass when you die. I give it with pleasure; 'tis all I can do Till the day when Gabriel's trumpet call you. "Then I'll welcome you in for eternity's stay, Where your troubles are ended forever and aye. So in spite of your troubles, now be of good cheer. Merry Christmas to you and a Happy New Year!"



ON THE UNION PACIFIC!

**Phenomenal Performance By 20 Type 4-8-4 Locomotives
With Timken Bearing Equipped Driving Axles!**



These locomotives went into service late in 1937. Throughout 1938 accurate operating records were kept by the railroad for comparison with other Union Pacific engines. Here are the results as published:

- 93.4% Availability!
- 50.21% Return on Investment!
- 15,000 Miles Per Month!
- 9.93 Cents Per Mile Running Repair Cost!
- 3.2 Cents Per Mile Shop Repair Cost!
- 13.13 Cents Per Mile Total Maintenance Cost!

AND NOW—10 more new Union Pacific locomotives are to have TIMKEN Bearings on all driving axles, engine trucks, trailer trucks and tender trucks!

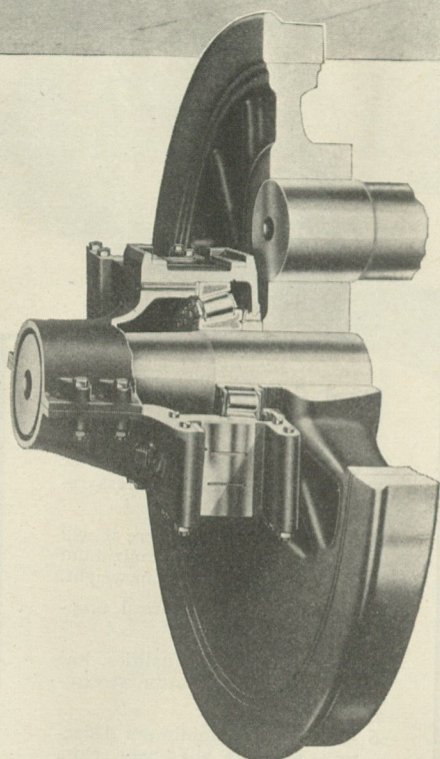
You can have the same efficiency and economy in your new locomotives by specifying Timken Bearing Equipped.

Remember, locomotives on the road accumulate revenue; locomotives in the repair shop accumulate expense. Increase availability and reduce running and shop expenses with TIMKEN Bearings!

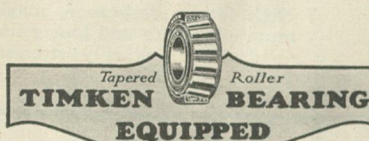
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN

RAILWAY ROLLER BEARINGS



TIMKEN Bearing Locomotive Driving Axle Application as used on Union Pacific locomotives.



A symbol of quality for any piece of equipment with which it is associated

Good Condition — FOR SALE — Prompt Delivery

2 - 92 TON AMERICAN LOCOMOTIVES (Code — NY 111X)

Built by the American Locomotive Works
Our numbers—269 and 320
Class—XR
Weight on Drivers—164,000 lbs.
Weight on Engine Trucks—20,000 lbs.

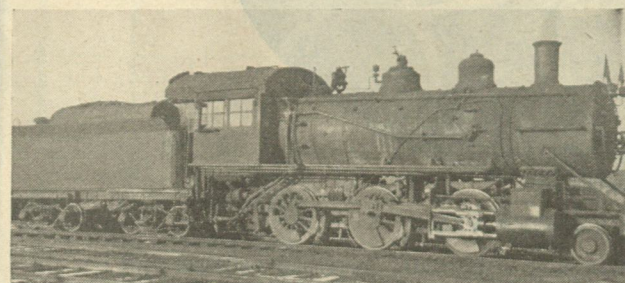
Heating Surface—
Fire Box—190 sq. ft.
Tubes—2672 sq. ft.
Total—2862 sq. ft.
Grate Area—54.4 sq. ft.

Tender:
Capacity: Water—6,000 gals.—Coal—12 tons
Weight: Empty—21,000 lbs.
Loaded—125,000 lbs.

Type 2-8-0
Steam Pressure—200 lbs.
Tractive Power—36,827 lbs.
Total Weight—184,000 lbs.

Height 14' 9"
Length 60' 1/2"
Cylinders—21" x 28"

Tubes: 354
2" diameter
14' long
Valve Gear—Southern



74 TON BALDWIN LOCOMOTIVE (Code — NY 113X)

Built by the Baldwin Locomotive Works
Our number—1889
Class: F7
Weight on drivers—128,512 lbs.
Weight on Engine Trucks—20,012 lbs.

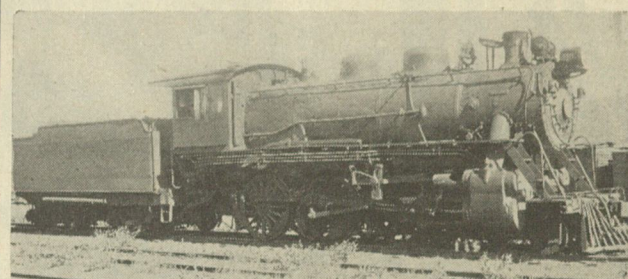
Heating Surface—
Fire Box—192.0 sq. ft.
Tubes—1715.0 sq. ft.
Total—1907.0 sq. ft.
Grate Area—33.25 sq. ft.

Tender:
Weight: Light—50,700 lbs.
Loaded—120,700 lbs.
Tubes: 1290—2" diameter—11' 4 3/8" long

Type—2-6-0
Steam Pressure—200 lbs.
Total Weight—148,524 lbs.
Tractive Power—26,849 lbs.

Cylinders:
19" diameter
28" stroke

Fuel—Coal
Ratio of Adhesion—4.78



56 TON AMERICAN LOCOMOTIVE (Code — NY 114X)

Built by the American Locomotive Co.
Our number—26
Builders number—47922
Class: S-44-TP-23

Weight—On drivers—112,000 lbs.
Engine—light—101,200 lbs.
Total—Engine & Tender—140,600 lbs.

Tender: Light weight—39,500 lbs.
Loaded weight—78,500 lbs.
Capacity: Coal—7 tons; Water—3,000 gals.

Wheel Base: Driving—11 ft.
Total—Engine & Tender—40' 3 1/2"
Overall length—Engine & Tender—54' 2"

Type 0-6-0
Steam Pressure—180 lbs.
Tractive Power—23,760 lbs.
Cylinders: 18" diameter
24" stroke

Fuel: Coal

DULIEN STEEL PRODUCTS, INC.
OF NEW YORK

2280 Woolworth Building
NEW YORK 7, N. Y.



102 Tower Building
WASHINGTON 5, D. C.

May 20, 1944

The Railroad Man

BY R. A. ELWOOD*

My hat is off to the railroad man
Of every grade and kind,
From the one that sits as president
To those that walk the line,
To the crew that takes the train along,
To the gang that sweeps the rail,
And all the bunch that do their part
So schedules shall not fail.

The railroad man, whatever he does
Is part of a system great,
That has for its end the good of all,
Be the traffic passenger or freight.
No matter what the weather is,
Clear, cloudy, sleet or snow,
The railroad man must clear the tracks
And make his traffic go.

God bless the railroad man today,
Wherever he may be found;
Keep him safe both day and night,
As he goes his work around,
Lord, cheer the heart of these men whose
toil
Helps so much to build our land,
And when they reach the end of their run,
Lord, welcome the railroad man.

They'll Do It Every Time

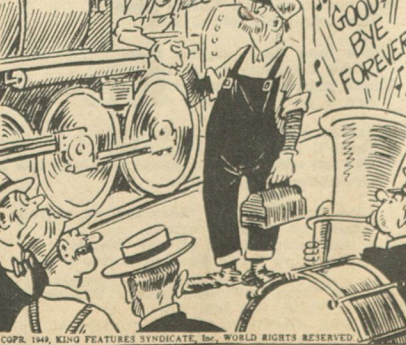
Engineered U. S. Patent Office

By Jimmy Hatlo

AFTER 30 YEARS AT THE THROTTLE,
OL' CASEY BONES FINALLY RETIRED
TO A WELL-EARNED REST.

SO LONG, CASE, YOU
LUCKY STIFF! NOTHIN'
TO DO BUT TAKE IT
EASY AND ENJOY
THAT PENSION...

TAKE GOOD CARE
OF OL' 95 FOR ME—
I'LL MISS HER—
I LEFT YOU MY
LEATHER CUSHION!



AND HOW MUCH REST IS HE GETTING?
AND WHERE DO YOU THINK HE'D
RATHER BE RIGHT NOW? YOU SAID IT!

DON'T DAUWLE SO
CASEY! I WANT YOU
TO COME IN AND
HELP ME WITH THE
WASHING!



THANK TO
CHAS. E. KNOTT,
659 BRIGHTON,
TOLEDO, OHIO
627

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PENIN CENTRAL	
NOT GOOD FOR PASSAGE	
TO IDENTIFY ACCOMMODATIONS PURCHASED. PROPERTY TAKEN INTO CAR WILL BE ENTIRELY AT OWNER'S RISK.	
FROM New York	ACCOM. 8 BC-11
TO WDC	DATE 3/10/70
VIA M. TRAIN	1 PCE
FROM Rehmd	ACCOM. 8 BC-11
TO Lafayette	DATE 4/16/70
VIA M. TRAIN	RFP
FROM Lafayette	ACCOM. 8 BC-11
TO JCL	DATE 4/16/70
VIA M. TRAIN	2CL
FOR PSGR. (S)	ON No. 017492
SELLING AGENT STAMP HERE	ENDORSEMENTS
VALUE \$ 18.00	
INTERLINE	
ISSUING AGENT WILL FILL IN DETAILS BELOW WHEN THROUGH TRIP REQUIRES MORE THAN ONE TICKET. ISSUED WITH FORM SC-103	
INITIAL STARTING POINT New York	FINAL DESTINATION Lafayette
PASSENGER'S CHECK FORM SC-103	27310

ISSUED BY SEABOARD COAST LINE RAILROAD COMPANY	
PASSENGER'S CHECK Form IRC-8	130536
In selling this ticket the selling carrier acts only as agent, and is not responsible beyond its own line. Subject to Tariff Regulations	
Vice Pres. - Pasgr. Traf. Richmond, Va.	
SPECIAL SERVICE CHARGE TICKET	
Seat(s) 25	Car. CW 30
Train No. 92	Time 1230P
Date 3/12/70	Code KFA 59
From HAINES CITY FLA	
To NEW YORK N Y	
(Valid only with Railroad Ticket(s))	
Form No. (s)	
Selling Agent Stamp Here A.C.L.R.R.CO.	Fare \$ 2.50
FEB 20 70	Children Under Five
HAINES CITY FLA.	Endorsements
	No. Passengers

162

SELLER
DATE
FORM DESTINATION Amt. Com. No.

THE HIGH IRON COMPANY, INC.
IN COOPERATION WITH THE
PENN CENTRAL COMPANY
IS PROUD TO ANNOUNCE
ANOTHER HISTORIC STEAM-POWERED

IRON HORSE RAMBLE

ON A FULL WEEKEND EXCURSION THRU THE
AUTUMNAL BEAUTY OF THE SCENIC MOHAWK VALLEY
FROM

GRAND CENTRAL TERMINAL

NEW YORK CITY
TO

NIAGARA FALLS, N.Y.

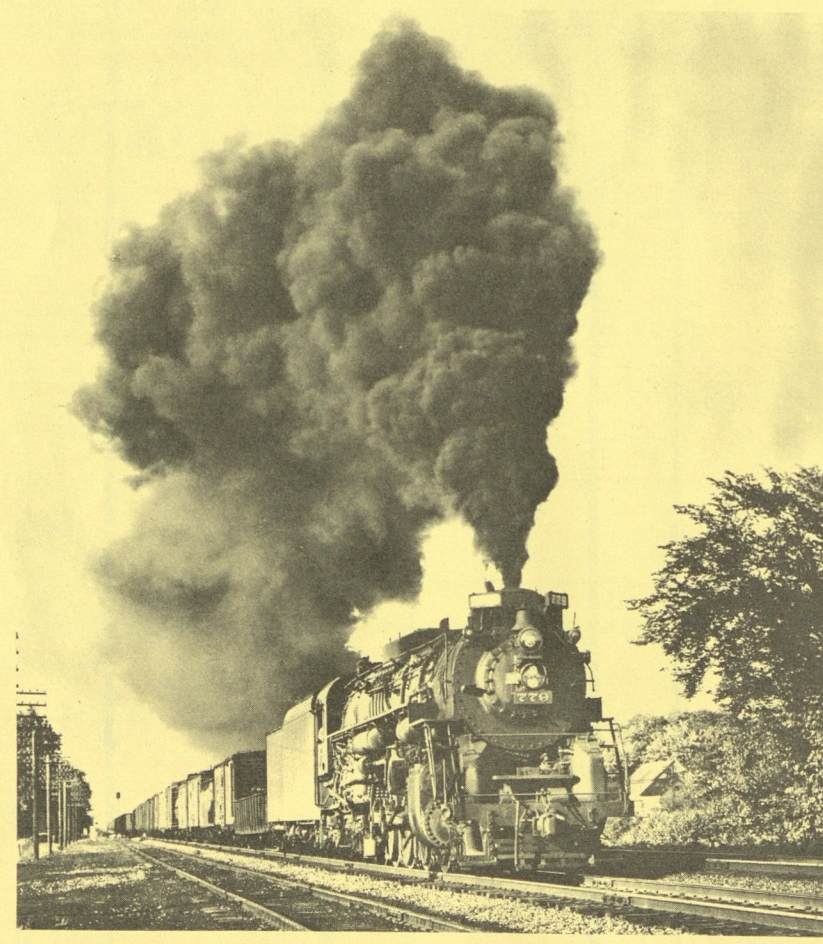
ON

SATURDAY, OCTOBER 12, 1968

RETURNING

SUNDAY, OCTOBER 13, 1968

950 MILES ROUND TRIP!!!



USING
EX-NICKEL PLATE BERKSHIRE TYPE STEAM LOCOMOTIVE 759
(2-8-4)
This Locomotive Is Part of Steamtown, U.S.A., Collection



to Sold

Join with us as our old high-driven steam locomotive rolls back the years to that now-faded era when everyone travelled by train and steam ruled the rails! Thrill to the sound of No. 759's mellow whistle as it screams defiance at those who would challenge our right of way at the grade crossings of memory! Hear the roar of her mighty drivers as we highball over the shining rails of the Penn Central in the great tradition of once-famous name trains.

Our train will include open-window Combination Car, 1912 Parlor Car, 1915 Dining Car, open-door Baggage Car, open Rocky Mountain Observation Car.

Don't miss this once-in-a-lifetime opportunity to relive the glittering era of railroading's "Golden Age"!

Lv. Grand Central Terminal, New York City	7:30 A.M.
Lv. Harmon, N. Y. (attach steam locomotive)	8:20 A.M.
Lv. Albany, N. Y.	11:00 A.M.
Ar. Niagara Falls	8:00 P.M.
Lv. Niagara Falls (Sunday, October 13th)	8:00 A.M.
Ar. Albany, N. Y.	4:00 P.M.
Ar. Harmon, N. Y. (detach steam locomotive)	7:30 P.M.
Ar. Grand Central Terminal	8:30 P.M.

ALL SEATS RESERVED

TICKETS MUST BE PURCHASED IN ADVANCE

Reservation Order Form
by mail

(Capacity Very Limited — Please Order Early)

THE HIGH IRON COMPANY, INC.

P.O. Box 200

Lebanon, New Jersey 08833

Phone: (201) 236-2200

Please send me the following ticket(s) for the "Mohawk Valley Limited" for Saturday and Sunday, October 12 and 13, 1968.

FROM

GRAND CENTRAL TERMINAL & HARMON, N. Y.

Adults @ \$37.95*

Children @ \$24.95*
(under 12 years)

ALBANY, N. Y. Adults @ \$35.00*

Children @ \$22.95*
(under 12 years)

which I enclose \$

Cash sent at sender's risk—Make checks and money order payable to The High Iron Company, Inc.

*Above fares are for railroad transportation only! Full hotel information will be sent with each ticket order.

I plan to board train at . . .

☐ Grand Central ☐ Harmon, N. Y. ☐ Albany, N. Y.

Name

Address

City State Zip

Please include a self-addressed stamped envelope.

THANK YOU

No future generation would experience the thrill enjoyed by its predecessors. No future American could stand awed beside the track and behold the majestic onrush of the iron horse, be deafened by the blast of the exhaust, the crash and clatter of steel on steel, and the hiss of escaping steam, or be momentarily shaken as the locomotive thundered past in a blurred flash of connecting rods, valve mechanism, and pounding wheels.

No child at night would ever again awaken to the eerie echo of a far-off steam whistle crying at a lonely crossing, or by day look out from a hillside at the long white plume of steam that marked a distant train charging down the valley below. The present generation of Americans can gaze back upon these things with nostalgia. The next will never know them.

PHOTOGRAPHY—A new award to Richard Kindig. Dick is surely one of the outstanding living practitioners of railroad photography. Since his first photograph in August, 1933, he had made over 12,000 pictures, mainly in the Colorado mountain area. Award made by R&LHS 1984



(1941)

Living legends at La Salle

I AT RIGHT, left to right, Richard H. Kindig, Union Pacific 8444, Howard Fogg . . . photographed on location at La Salle, Colo., during the course of a Rocky Mountain Railroad Club excursion out of Denver on July 18, 1979. What an awesome contribution this trio has made to our common preoccupation. TRAINS, to name just one of their debtors, treasures that a Kindig shot of doubleheaded Rio Grande 4-8-2's departing Salida, Colo., with 83 cars appeared in our November 1940 issue (Vol. 1, No. 1); that a young, three-digit 844 was shown moving the *Transcon* out of Las Vegas in our April 1947 number (Vol. 7, No. 6); and that a Fogg drawing of Milwaukee Road 4-8-4 239 leaving Bensenville, Ill., on

tonnage was published in our January 1948 edition (Vol. 8, No. 3).

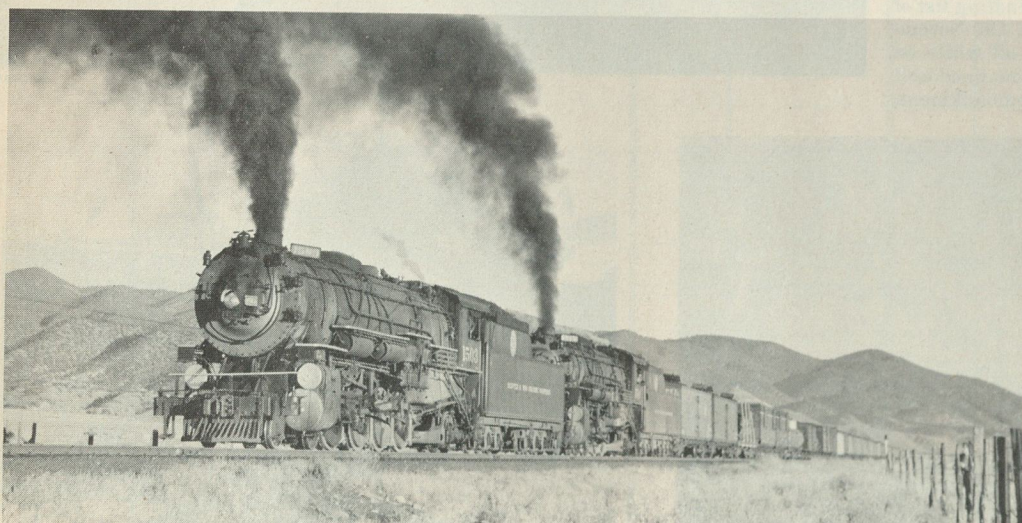
To place a yardstick on their work, dwell on the now-vanished Colorado railroad scene which we all can recall, thanks to where, when, and how Dick aimed his cameras. Think on the thousands of people for whom that Alco Northern's high-r.p.m. drivers and bellowing oil fire have replayed the drama of the steam season. Contemplate all the canvases of the high iron that Howard's brushes have created for Barriger and Beebe, Alco and Leanin' Tree and W. H. Miner.

We wish that Lucius was here to inscribe this photo of happy veterans with an appropriate caption, for he could have summoned up and



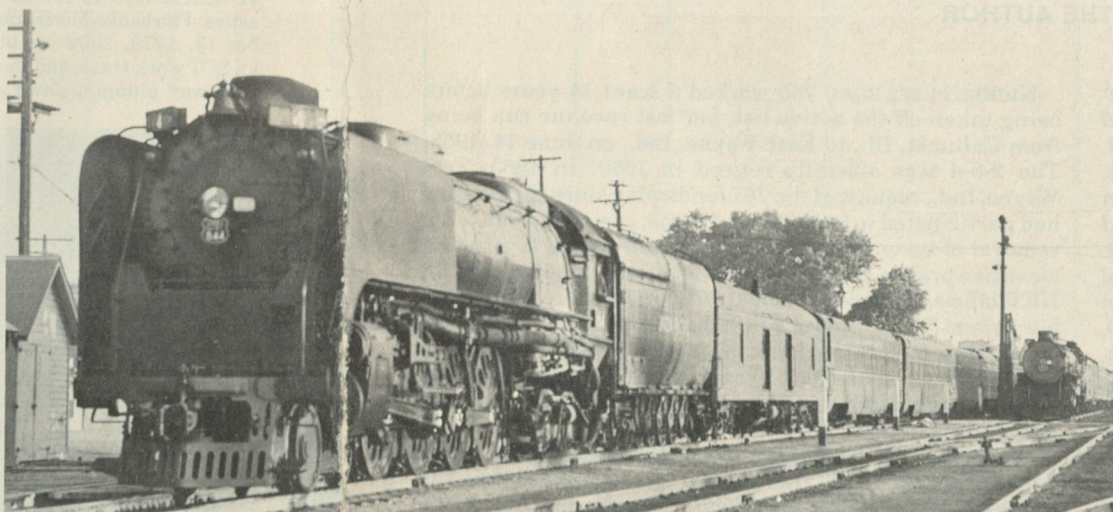
Ted Benson.

spliced matchless adjectives, nouns, and verbs to salute this photographer/locomotive/artist team. Never mind; Ted Benson, who assembled the trio, called his portrait "Living Legends at La Salle." LB could not have faulted that.—D.P.M.



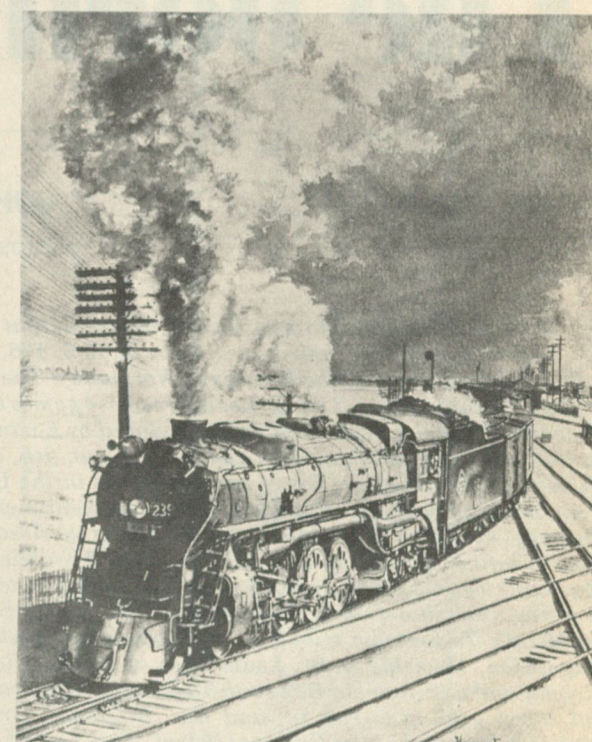
R. H. Kindig.

RIO GRANDE Mountains 1503 and 1510 get a roll west from Salida.



Fletcher Swan.

UNION PACIFIC 844 clears Las Vegas with No. 4, the *Transcon*.

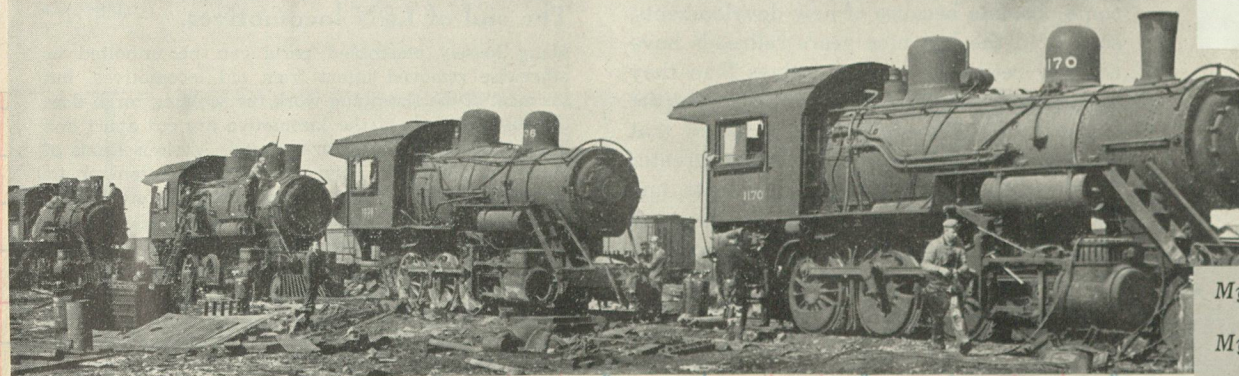


Yousen Tree.

FOGG'S S-2, based on a Henry J. McCord photo.

20

The Vanishing Iron Horse



My engine now is cold and still,
No water does my boiler fill,
My coal affords its flame no more,
My days of usefulness are o'er.
My wheels deny their wonted speed,
No more my guiding hand they need.
My whistle, too, has lost its tone,
Its shrill and thrilling sounds are gone.
My valves are now thrown open wide,
My flanges all refuse to guide . . .
No more I feel each urging breath,
My steam is now condens'd in death.

GOTTERDAMMERUNG !



Edmund H. Royce.

LAST OF THE LOT: steam locomotives of dieselized Central Vermont await scrapping in the yard at St. Albans, Vt., in the summer of 1957. No. 707, the 2-10-4 in the center, is the end of the road's Texas line, once the heaviest steam power in New England.



RAILWAY AGE

1906 --- 1942

Thirty-Six Years on Railway Age

By the Editor

This week the writer completes thirty-six years' service as consecutively associate editor, managing editor and editor of *Railway Age*, and as head of the company that issues it and other publications.

When this service began most conditions in the railway field were widely different—but, significantly, not all of them. Thirty-six years ago, as now, the nation had full employment and the railways had a manpower shortage; and the railways had—or thought they had—a much greater shortage of facilities than they now fear that they may have. This in spite of the facts that they then had more employees, locomotives and cars than now with which to handle a much smaller traffic. Comparisons—and contrasts—between railway conditions and problems then and now, and review of the long series of developments that have changed them, may not only be interesting at the present time, but seem well worth making because of the light they may throw on present and prospective problems.

James J. Hill on the Situation

In 1906 railway freight traffic was 216 billion ton-miles, or one-third as large as in 1942. Passenger traffic was 25 billion passenger-miles, or half as large. There were 1,521,000 employees, or 230,000 more than in 1942; 51,672 locomotives, or 10,227 more; 1,837,914 freight cars, or 122,000 more; and 42,262 passenger-train cars, or 4,400 more. And yet at that time the *Railway Age* was replete with references to the severe congestions of traffic and shortage of cars prevailing, and with discussions of proposed legislation and other action to remedy the situation—including adoption of government ownership.

There was quoted an open letter by James J. Hill to the governor of Minnesota showing that in the preceding decade ton-miles had increased 118 per cent and passenger-miles 95 per cent, as compared with mileage, 21 per cent; locomotives, 35 per cent; passenger cars, 23 per cent; and freight cars, 45 per cent. "The investor," said Mr. Hill, "declines to put his money into enterprises under ban of unpopularity, and even threat-

ened by individuals and political parties with confiscation or transfer to the state."

Development Intensive Since 1906

Actually, the railway industry was earning a larger percentage of return then than it ever has since; and its total investment had increased \$2,900 million, or 30 per cent, during the preceding decade. But the investment had been made largely for *extensive* development, as indicated by Mr. Hill's figure showing an increase in *miles of line* of 21 per cent. With almost no increase in investment or equipment, and principally because of *intensive* development before the depression, the railways succeeded in 1942 in handling a traffic which in *three years* had increased 90 per cent in ton-miles and 135 per cent in passenger-miles.

Quotation of the references to the "ban of unpopularity" and to threats of "confiscation or transfer to the state," made in his letter by Mr. Hill, one of the outstanding railway leaders of all time, makes a good start in a review of the later ups and downs of the industry. In 1942, as compared with 1906, it had (1) more than doubled its investment; (2) trebled its service in handling traffic; (3) quadrupled the average annual pay of its employees (from \$592 to \$2,286); (4) trebled its operating expenses; (5) had its taxes increased 1,725 per cent; but (6) had not doubled its net operating income or its net income available for dividends and improvements.

Investors Fared Better Than

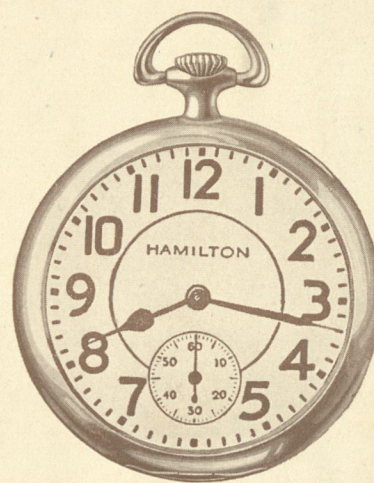
In the ten years ending with 1906—during which it was recovering from the depression of the Nineties—it earned an average of 4.83 per cent on investment; and its net operating income of \$720 million in 1906 yielded a return of 5.8 per cent. In the ten years ending with 1942 it earned an average of only 2.56 per cent on investment; and its record net operating income of \$1,390 million in 1942 yielded a return of only 5.23 per cent.

The thirty-six years of railway history since 1906



If You Want an Accurate Watch — Buy a HAMILTON

HAMILTON No. 992. 16 size, 3/4 plate. 21 jewel movement, adjusted to heat, cold, isochronism and five positions. Will pass inspection on ALL RAILROADS.



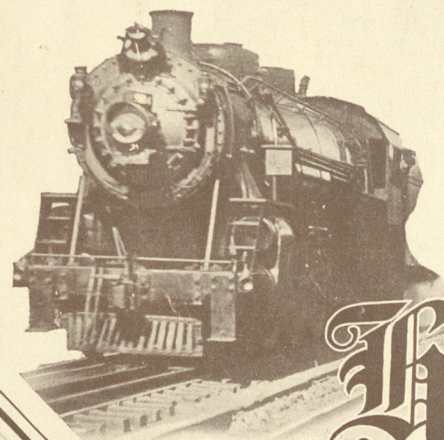
ENGINEER STEVENSON of the Lackawanna, Conductor Mandaville of the Erie, Engineer Monk of the Erie and Conductor Landy of the Chicago and Northwestern are but four of the thousands of Railroad Men who keep to schedule on Hamilton time.

Wherever you find Railroad time inspection maintained, you'll find Hamiltons predominating; which is in itself a significant fact. It proves the Hamilton to be the favorite of Railroad Men who must have watches they can depend upon to tell true time.

Insist on owning a Hamilton. It is a watch built sturdy and strong, with timekeeping qualities that better the standards set for Railroad service. The Hamilton No. 992, here shown and described, is preferred by most Railroad Men. For other than time inspection service, ask to see the Hamilton movement No. 974. This model gives you Hamilton quality at a lower price.

Write for a copy of our new timekeeper, which tells the story of the Hamilton Watch and gives much valuable information.

HAMILTON WATCH COMPANY
LANCASTER, PENNA., U.S.A.

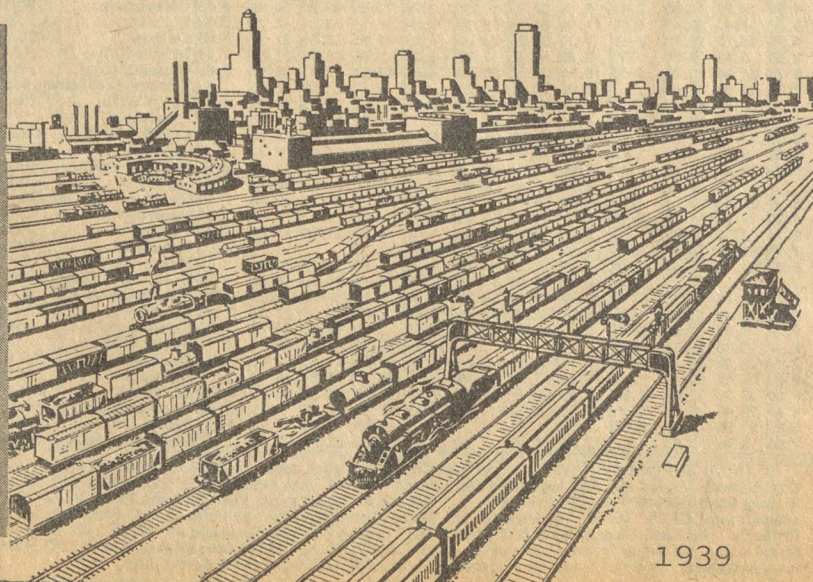


Hamilton Watch

"The Railroad Timekeeper of America"

RAILROADS ARE
READY

Ready-now-to meet
the nation's needs
for modern mass
transportation.



1939

ASSOCIATION OF AMERICAN RAILROADS



FIDDLERTOWN & COPPERPOLIS RY.

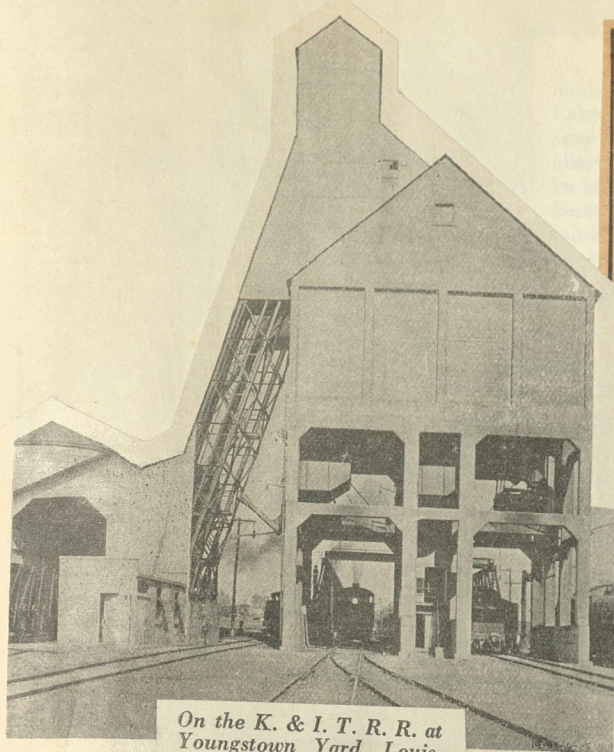
No. 5 Yuletide Conviviality at the Round-house Gathers Guiding Spirits of the F & C.

by Carl Fallberg

Reading from left to right, standing: Forrey Hobbs, Master Mechanic; C. C. Crum, Treasurer; Artemus Bailey, Vice President & Gen'l Mgr.; Theophilus Stone, Freight Agent; J. W. Sipes, Trainmaster; Unidentified Engineer.
Seated, left to right: Anson Q. Updyke, Superintendent;

Lucius Smiley, Legal Counsel; Dillon P. Yancey, President; Zebulon Poe, Roadmaster; Enoch Pinchpenny, Conductor.
On Floor, left to right: Darius Crouch, Dispatcher; Gideon Porter, Shop Foreman; Judah Merkle, Locomotive Repair Foreman; Smokey, Office Cat.

for this picture because of previous commitments at the Golden Nugget Saloon were Traffic Manager Dabney Panfill, Boiler Shop Foreman Geo. Posey and Car Shop Foreman Abraham Potts.



On the K. & I. T. R. R. at
Youngstown Yard, Louis-
ville, Ky.



THE NEW MAN.....Joe Easley

"You oughta be off the extra board in seven years; thirty-five more, if you live,
you'll be a conductor and have a lotta fun stayin' up nights and never bein' home"

Travelers and Railroad Men

SHOULD BE PROTECTED AGAINST THEIR
Special Hazards of Travel and Occupation
BY A YEARLY GENERAL ACCIDENT POLICY IN THE

TRAVELERS

Life and Accident Insurance Co.
OF HARTFORD, CONN.

Cash Assets.....\$7,435,000 | Accident Policies Written.....1,000,000
Surplus to Policy-Holders.....1,868,000 | Accident Claims Paid.....105,000

TOTAL AMOUNT ACCIDENT-LOSSES PAID, \$6,500,000.

THE TRAVELERS has paid towards a Million Dollars to the families of railroad
men killed or disabled by accident.

JAMES G. BATTERSON, Pres. RODNEY DENNIS, Secretary. JOHN E. MORRIS, Asst. Secretary.

Offices at 173 Broadway, New York; cor. State and Kilby Sts., Boston; Montauk Block,
Chicago; and in Principal Cities and Towns in the United States and Canada.



RIDING ON A RAILROAD TRAIN

SOME people like to hitch and
hike;
They are fond of highway
travel;
Their nostrils toil through gas and
oil,
They choke on dust and gravel.
Unless they stop for the traffic cop,
Their road is a fine-or-jail road,
But wise old I go rocketing by;
I'm riding on the railroad.

I love to loll like a limp rag doll
In a peripatetic salon;
To think and think of a long cool
drink
And cry to the porter, "Allons!"
Now the clickety-clack of wheel on
track
Grows clickety-clackety-clicker.
The line is clear for the engineer
And it mounts to his head like
liquor.

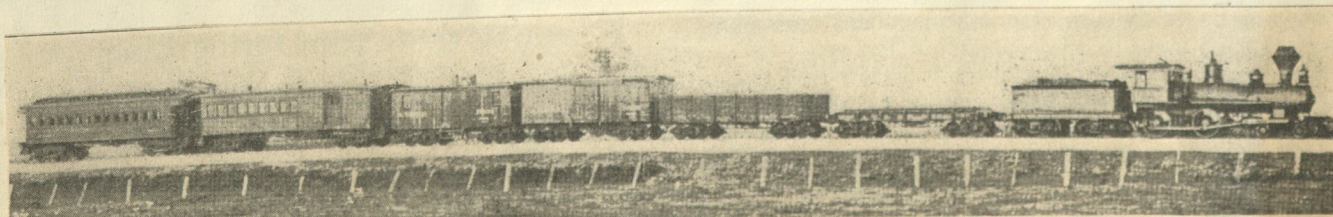
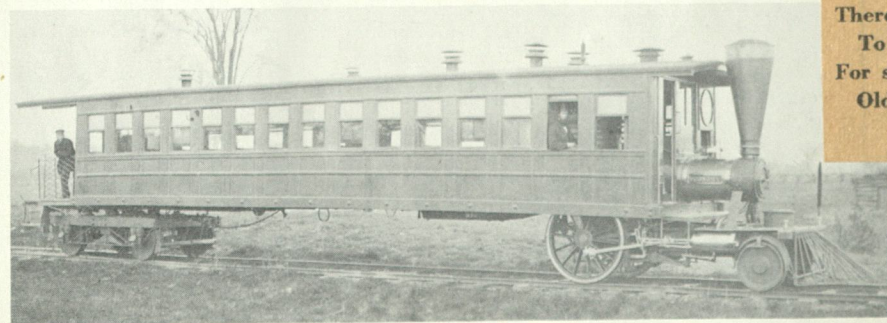
Oh, give me steel from roof to
wheel,
But a soft settee to sit on,
And a cavalcade of commerce and
trade
And a drummer to turn the
wit on.

Stuyvesant chats with Kelly and
Katz,
The professor warms to the
broker,
And life is good in the brotherhood
Of an air-conditioned smoker.

With a farewell scream of escaping
steam
The boiler bows to the Diesel;
The Iron Horse has run its course
And we ride a chromium weasel;
We draw out power from the
harnessed shower,
The lightning without the
thunder,
But a train is a train and will so
remain
While the rails glide glistening
under.

Oh, some like trips in luxury ships,
And some in gasoline wagons,
And others swear by the upper air
And the wings of flying dragons.
Let each make haste to indulge his
taste,
Be it beer, champagne or cider;
My private joy, both man and
boy,
Is being a railroad rider.

—Ogden Nash.



Representative Types of Rolling Stock in 1881.

I like to Go when I have to Go



When I make my plans
to leave for somewhere
at 7 o'clock, I hate to
wait around till 8:15 before the last member of the
party is ready. It wastes my time, spoils my dis-
position and makes me late at the other end. That's
why I like to take the train—it starts on schedule
and arrives on time.

I hate to sit cramped for hours, accommodating
my legs and feet to extra luggage on the floor. I
like to sit comfortably stretched out when I travel
—and so I take the train.

I don't like to dodge around those giant inter-city
trucks. They frighten me. They look dangerous.
They make good drivers nervous. They make strong
men to swear and lovely ladies to scream. It's
almost as bad to be scared half to death as it is to
be killed. Talk about road hogs—those inter-city
trucks are worse than hogs—they're insolent, roar-
ing, swash-buckling bullies . . . They're so big
they'll mess with any ordinary conveyance—but
they never bother me when I ride on the train.

I don't like these drivers that are always looking
for a road race. A race is all right at Indianapolis
or Daytona Beach, but it's no good on Trunk
Highway 13. Of course, every so often one of
these speed boys races a train to the crossing, and
I always feel sorry for the poor saps that were rid-
ing with him. They'd be much better off riding
on the train.

I like to read as I travel.

I like to sleep at night stretched out horizontally.

OUR LAST TRAINS

WE paid but scant attention when
They said that Number 1
And Number 2—the sleeper trains—
Had made their final run.
Nobody seemed to notice when
The others left the line,
Until the only trains we have
Are Numbers 8 and 9.

For years the villages have set
Their household clocks aright
When, with their whistles roaring loud,
These trains flashed through the night.
No matter what the weather or
Conditions on the line,
The people know they can depend
On Numbers 8 and 9.

And now the railroad says the branch
Just can't be made to pay—
It wants to cancel these last two
And sell the right-of-way.
There must be something we can do
To save our railroad line,
For some day we are sure to need
Old Number 8 and 9.

—Perry N. Storm

I like to take my clothes off when I go to bed.

I have slept on the ground many a time—but when
I'm traveling to arrive somewhere—on a business
trip or the start of a vacation—I like to get sleep
that leaves me rested.

I like to wash my face and hands at intervals, and
it may be a foolish notion, but I like to dry them
on a clean towel. On a private towel.
That's why I take the train.

I like a drink of water when I'm thirsty. I may not
care about it when someone else is thirsty, or when
we come to a drinking place on regular schedule,
but when I myself am thirsty. And I can have it
on the train.

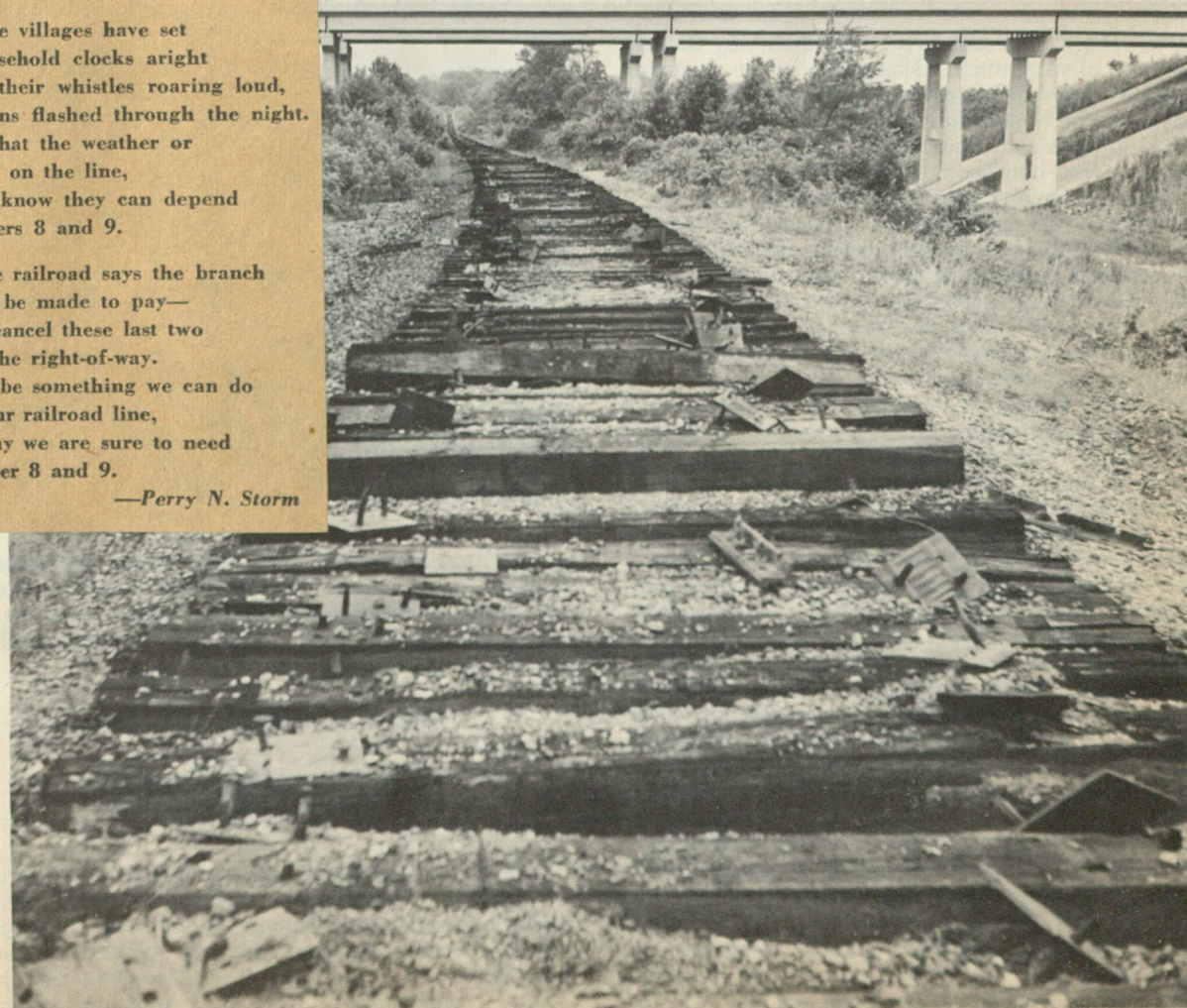
I like to eat when I myself am hungry. They let
me do that on the train.

I have never been able to schedule a business trip
according to weather. Very often I am obliged to
travel when it is bitter cold, or in the midst of
heavy rain, snow or fogs. The train takes me
through on schedule—rain or shine, hot or cold,
day or night, summer or winter, low ceiling or high.
It's the dependable factor in travel.

Worst of all, I hate watchful waiting for the last
twenty miles before the next rest stop. I know
that everyone else is watchfully waiting, too. The
air becomes tense. The situation nerve-racking.
Friendship ceases—for when a lot of people want
to go out at the same time, and there's only one
door to go out through, and only one door to go in
through, and only one or two you-knows when you
get to the place—then, I say, friendship ceases and
strife begins. Every man for himself, and devil
(or cramps) take the hindmost.

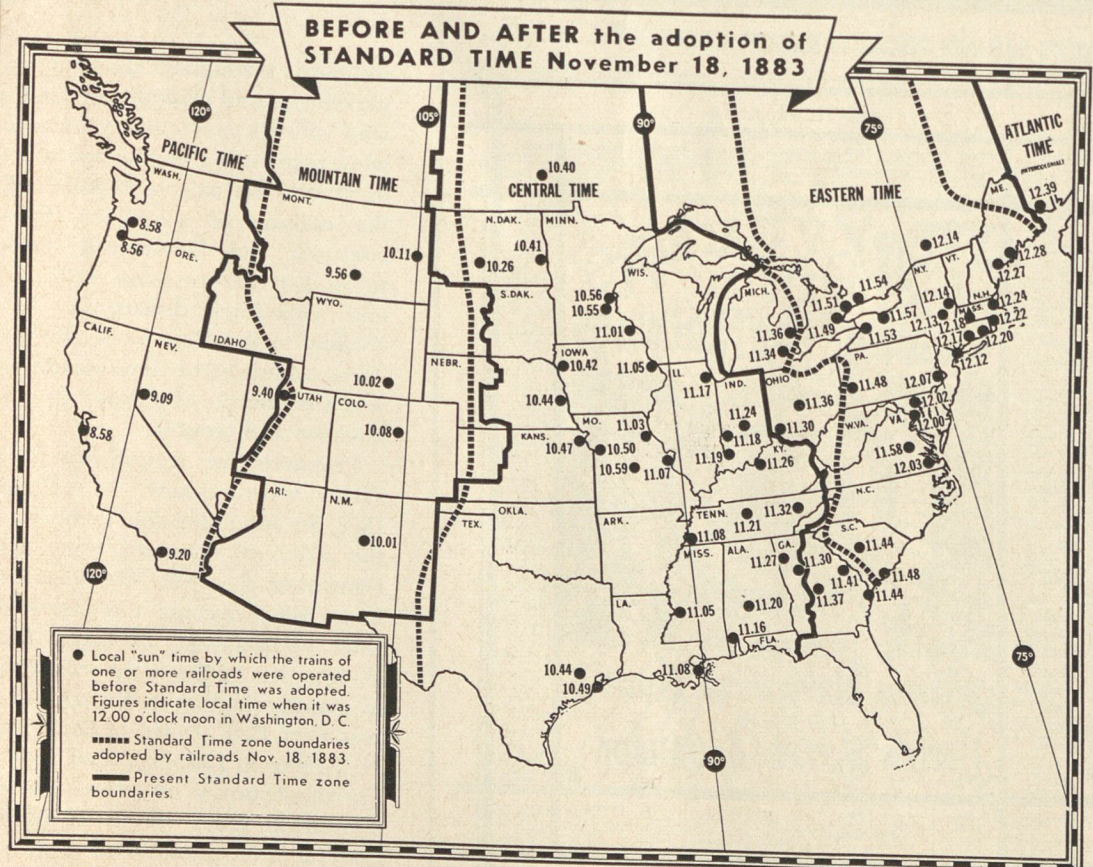
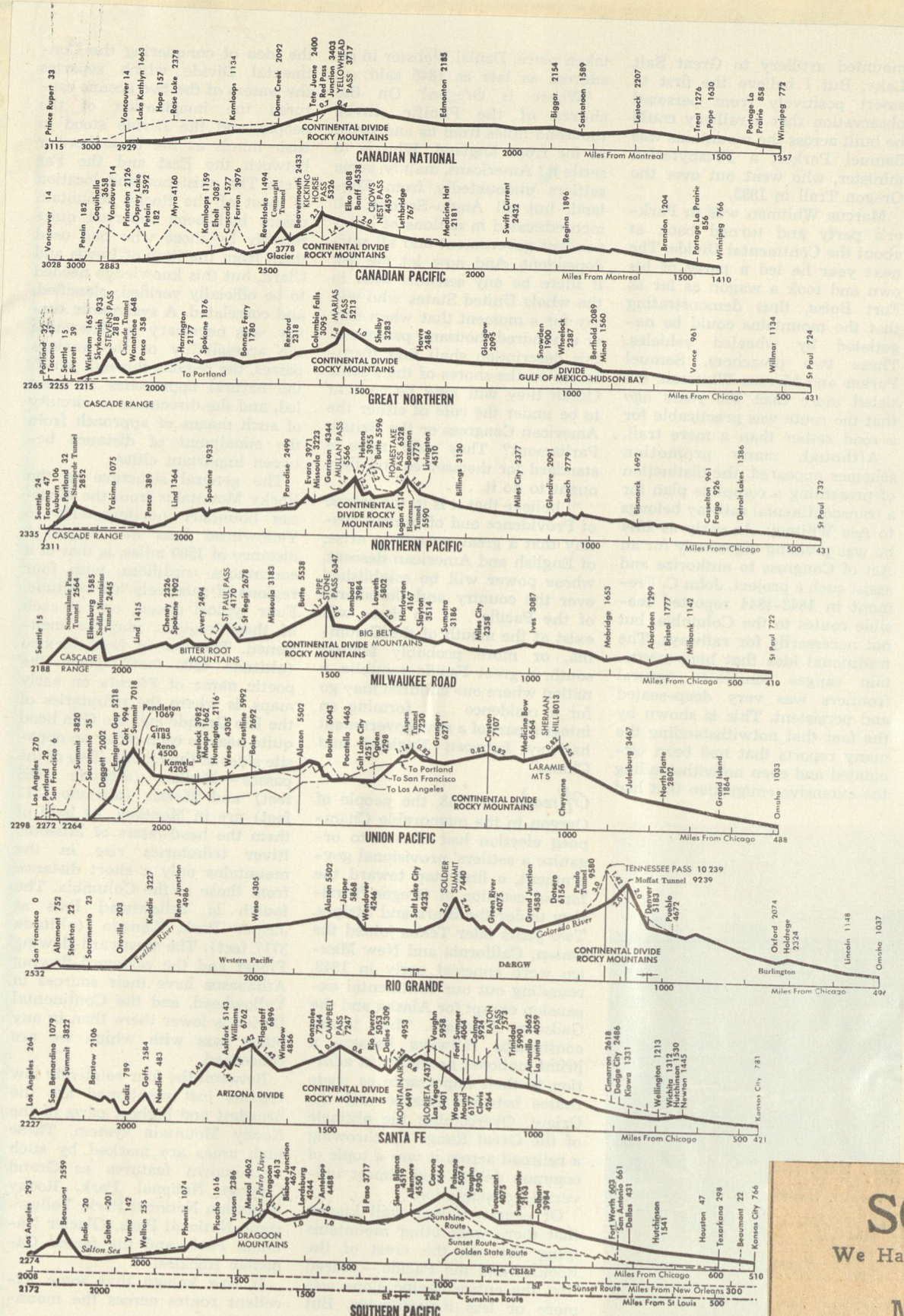
No sir, I much prefer to go when I have to go.
That's another reason why I take the train.

RYA 9 1937

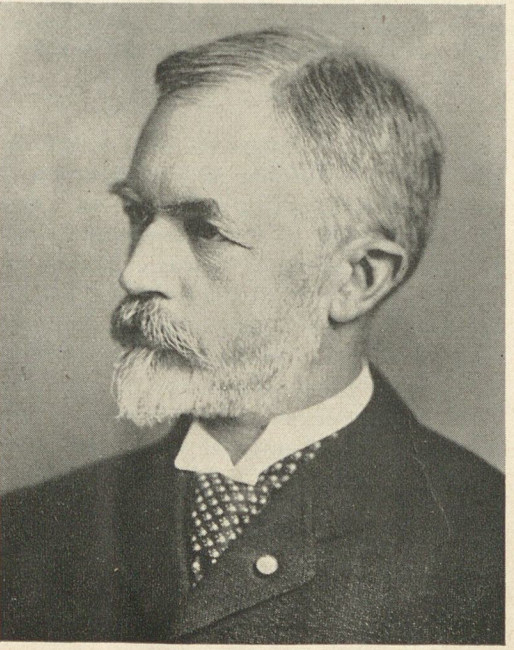


Is this the future of railroads in the United States?

Clifton E. Hull.



There is no telling how many different "local times" there were in the entire country prior to the adoption of standard time, but we do know that there were at least 68 different times used by the railroads, and, according to one authority, there were, a few years prior to 1883, something like 100 different times in use by the railroads of this country. Thus when it was noon in Chicago, it was 12:31 in Pittsburgh, 12:24 in Cleveland, 12:17 in Toledo, 12:13 in Cincinnati, 12:09 in Louisville, 12:07 in Indianapolis, 11:50 in St. Louis, 11:48 in Dubuque, 11:41 in St. Paul, and 11:27 in Omaha.



For many years the secretary of the General Time Convention and the American Railway Association was William F. Allen, managing editor of the *Official Guide*. In his capacity as secretary of the General Time Convention, Mr. Allen worked untiringly for the adoption of standard time. In the waiting room of Union Station, in Washington, there is a large bronze tablet which gives William F. Allen the credit which is due him for his part in that very important achievement.



"Quick! Ask that young man if he'd like to go braking."

SCHOOL BOYS

We Have Excellent Opportunities for Part-Time Work in the Railroad Industry

Mornings or Afternoons
All Day Saturday and Sunday

This part-time work will supplement your school allowance and enable you to purchase more War Bonds. These jobs are vital to the war effort and you can make a direct contribution to our men on the fighting fronts by working in the railroad industry.

Apply to
U. S. Railroad Retirement Board
1717 Champa Street
Boys now employed in an essential activity must have a statement of availability.
Denver Post 10/17/43

- 1881 — Steam heating system first installed in passenger trains, replacing stoves and hot water heaters.
- 1883, JANUARY 12 — Direct rail route completed from California to New Orleans.
- 1883, SEPTEMBER 8 — Entrance of first rail route from Great Lakes into Washington Territory celebrated; many American and foreign notables attended spike-driving ceremony; extended to Puget Sound via Cascade Mountains, July 1, 1887.
- 1883, NOVEMBER 18 — Trains began operating on railroad-conceived "standard time," which was generally adopted by the rest of the country and which was ultimately made official by Congress with passage of the Standard Time Act on March 19, 1918.
- 1884, NOVEMBER 25 — Middle transcontinental route from Chicago to Pacific Northwest joined at Huntington, Oregon; through traffic commenced December 1, 1884.
- 1887, FEBRUARY 4 — Interstate Commerce Act, creating Interstate Commerce Commission, signed by President Grover Cleveland.
- 1887, APRIL 14 — General Time Convention, a predecessor of Association of American Railroads, adopted first standard code of train rules.
- 1887, APRIL — First train with solidly built vestibules connecting passenger cars placed in service, between New York and Chicago.
- 1887, JUNE 17-18 — Successful test runs made by passenger train hauled by oil-burning locomotive, Altoona to Pittsburgh and return.
- 1887, DECEMBER — Completion of direct rail route linked Seattle and Portland with San Francisco, Los Angeles and San Diego.
- 1887 — Extensive air-brake tests conducted during 1886-87 on 50-car freight trains at Burlington, Iowa, led to adoption of automatic, quick-action, triple-valve brake for freight service.
- 1887 — First passenger trains fully equipped with electric lights placed in service.
- 1888 — Number of freight cars on U. S. railroads reached 1 million for first time; rose to peak of 2.7 million with average capacity of 45.1 tons in 1926; by 1974 fleet reduced to 1.7 million with an offsetting increase in average capacity to 72.8 tons.
- 1893, MAY 10 — Locomotive No. "999" made world's first 100-mile-an-hour run.
- 1895 — First electrification of a section of a steam railroad in United States completed — in Massachusetts, New Jersey and Maryland.
- 1896, APRIL 15 — Miami, Fla., reached by railroad from Jacksonville and North.
- 1898 — First railroad in Alaska opened from Skagway to White Pass City, British Columbia; line opened through to Whitehorse, August 15, 1900.
- 1900 — Total investment in railroad properties exceeded \$10,000,000,000 for first time; figure stood at about \$37,000,000,000 by end of 1974.
- 1901 — Mechanical coal stokers for locomotives introduced.
- 1902 — Railroad route mileage in United States passed 200,000-mile mark and reached a peak of 254,037 by 1916; gradually reduced thereafter to about 200,000 by the end of 1974.
- 1904 — All-steel passenger cars placed in service.
- 1907 — Number of line-haul operating railroads reached peak of 1,564; consolidations and mergers reduced number to estimated 332 by the end of 1974.
- 1914 — Tests begun looking to use of radio in railroad communications.

- 1917, DECEMBER 28 — Federal Government took control of railroads as wartime emergency measure; fiscal control became effective January 1, 1918; returned to owners by Federal Government March 1, 1920.
- 1920, AUGUST 26 — Motion pictures shown on trains between Atlanta, Ga., and Montgomery, Ala., with musical accompaniment furnished by Edison phonograph; showings continued for several months.
- 1925, OCTOBER 20 — First diesel-electric locomotive (a switcher) installed in railroad service.
- 1927, JULY 25 — System of centralized traffic control, installed on 40-mile route near Berwick, Ohio, was placed in operation; "CTC" has since been installed on over 47,000 miles of track.
- 1928, FEBRUARY 26 — In formal opening, first train passed through the 6.2-mile Moffat Tunnel, west of Denver, then the longest in the U. S.
- 1928, DECEMBER 7 — Railway Express Agency (now REA Express) organized to handle nationwide express business.
- 1929, JANUARY 12 — Cascade Tunnel, 7.79 miles in length, now longest in Western Hemisphere handling normal railroad operations, opened in Washington State.
- 1929, SEPTEMBER 9 — First air-conditioned Pullman car operated between Chicago and Los Angeles.
- 1931, MAY 24 — World's first completely air-conditioned passenger train placed in service between Washington and New York.
- 1932, NOVEMBER 21 — Recreation car, "Miami Biltmore," placed in service between New York and Miami, providing entertainment and recreation facilities supervised by hostess.
- 1934, MAY 26 — First diesel-electric powered streamlined train ran non-stop 1,015 miles, Denver to Chicago, at average speed of 77.6 miles per hour, breaking existing speed and distance records; later became first streamlined passenger train placed in regular service (November 11, 1934, between Lincoln, Nebr., and Kansas City, Mo.).
- 1934, OCTOBER 12 — Association of American Railroads formed by consolidation of American Railway Association and other organizations, some of which dated to 1867.
- 1937, MARCH — Two-way train telephone communications system inaugurated in mainline railroad operation, between Albion, Pa., and Pittsburgh.
- 1937, JULY 1 — Federal Railroad Retirement Act went into effect for all railroad employees, replacing voluntary retirement and disability benefits on some 80 major railroads.
- 1938, MARCH 1 — Anti-telescoping tightlock couplers adopted as alternate standard for passenger-train cars; became standard in 1946 after years of service tests.
- 1941 — First diesel-electric road freight locomotives placed in regular service.
- 1944 — Passenger travel reached peak of 95.6 billion passenger-miles; under pressure of airline and automobile competition, rail travel declined to a low of 8.6 billion passenger-miles in 1972.
- 1945, MAY 17 — Federal Communications Commission allocated radio channels for exclusive railroad use; first construction permit granted by FCC on February 27, 1946.
- 1945, JULY 23 — First modern domed observation car introduced, operating between Chicago and Minneapolis.

HERE'S A WAR JOB FOR *You*

RAILROAD WORKERS

*Urgently
Needed*

Apply to any railroad office or
agent—any office of the Railroad
Retirement Board—or to the U. S.
Employment Service.

RAILROAD MANPOWER MOBILIZATION COMMITTEE

Railroad Manpower Mobilization Recruiting Poster,
Published by the Association of American Railroads

News Department continued on next left-hand page

Railway Age—April 15, 1944

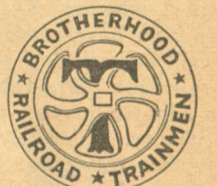
PLEASE--Store in flat position

How to Tell Them

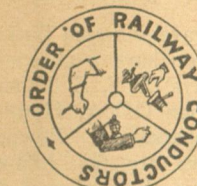
Coat-Label Emblems Worn by Members of Various
Rail Labor Groups



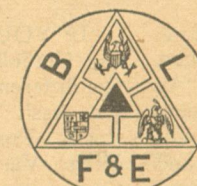
BROTHERHOOD OF
LOCOMOTIVE
ENGINEERS



BROTHERHOOD OF
RAILROAD
TRAINMEN



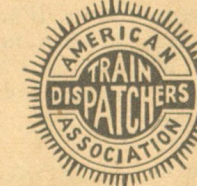
ORDER OF
RAILWAY
CONDUCTORS



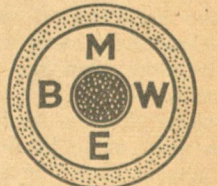
BROTHERHOOD OF
LOCOMOTIVE
FIREMEN & ENGINEMEN



BROTHERHOOD OF
RAILWAY CARMEN
OF AMERICA



AMERICAN
TRAIN DISPATCHERS'
ASSOCIATION



BROTHERHOOD OF
MAINTENANCE OF WAY
EMPLOYEES



BROTHERHOOD OF RAILWAY &
STEAMSHIP CLERKS, FREIGHT
HANDLERS, EXPRESS & STATION
EMPLOYEES



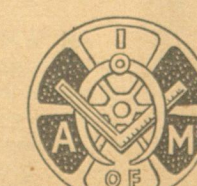
SWITCHMEN'S UNION
OF
NORTH AMERICA



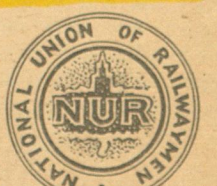
ORDER OF
RAILROAD
TELEGRAPHERS



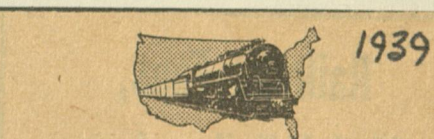
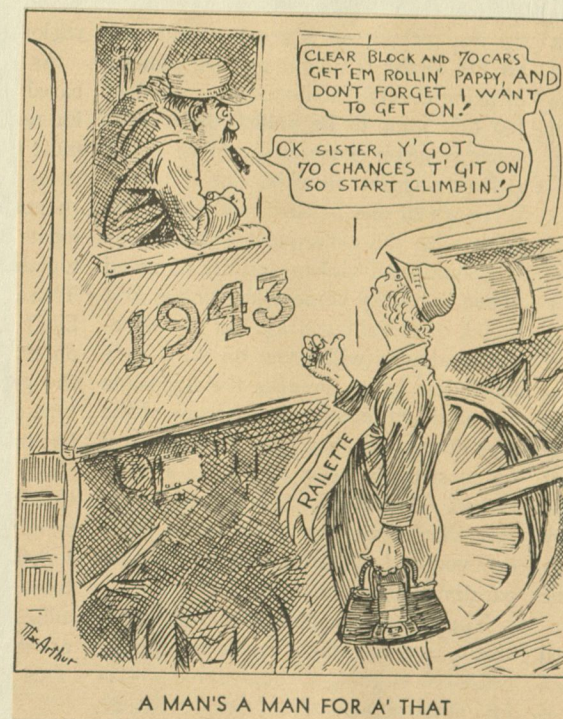
RAILWAY MAIL
ASSOCIATION



INTERNATIONAL
ASSOCIATION
OF MACHINISTS



NATIONAL UNION OF
RAILWAYMEN
(Canadian)

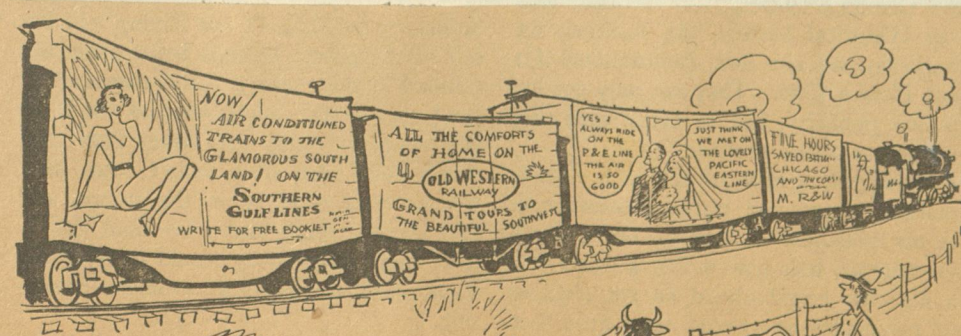
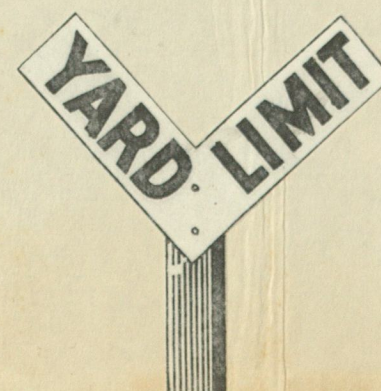


See America
\$90
(Round Trip Railroad Fare)

Start from your home town now on a Grand Circle Tour of the United States—east coast, west coast, border to border—go by one route, return by another, with liberal stopovers—for \$90 railroad fare in coaches—\$135 in Pullmans (plus \$45 for one or two passengers in a lower berth).

Get the full facts from your ticket agent about the greatest travel bargain in history!

ASSOCIATION OF AMERICAN RAILROADS
Washington, D. C.



Using the Sides of Box Cars as Bill Boards, as Many Readers Suggested, Might Not Be a Bad Idea. In Order to Get the Most Out of Its Advertising a Railroad Would Have to Keep Its Cars Moving on the Main Line. Either That, or Build Sidings Along the Highways!

